PROBLEMS OF FAITH

A CONTRIBUTION TO PRESENT CONTROVERSIES

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BEING A THIRD SERIES OF

Lectures to Young Men,

DELIVERED AT THE

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WITH A PREFACE BY THE

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PREFATORY NOTE.

VERY few words are required to introduce this volume. It is the third of a series, the two earlier volumes of which appeared in 1873 and 1874, under the titles, "Some Present Difficulties in Theology" and "Disputed Questions of Belief." Like its predecessors, it is addressed in the first instance to thoughtful young men whose minds are occupied with those central "problems of faith," around which not only the religious, but even the scientific and philosophic, thinking of our time revolves. Like them, too, the lectures

contained in it have been read before large audiences, composed exclusively of this class, convened in the College of the Presbyterian Church in England. They are now issued under the sanction of the college authorities, whose best thanks are due to the lecturers, but especially to the two first—the Duke of Argyll, and Professor Watts of Belfast—who, though attached to other branches of the Presbyterian communion, have most readily lent their valuable co-operation in this endeavour to illustrate and justify our common Christian faith.

J. OSWALD DYKES.

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Anthropomorphism in Theology.

BY

HIS GRACE THE

DUKE OF ARGYLL, K.T.

I.

ANTHROPOMORPHISM IN THEOLOGY.

I UNDERSTAND it to be the intention of those by whom this course of lectures has been arranged, that each lecture of the series should deal with some one or more of the intellectual difficulties which are at present most seriously felt in connection with Theology. In fulfilment of this intention, I propose to deal to-night with one great question, which cuts, perhaps, more deeply than any other—the question no less, whether there be any faculties in the mind of man having such relations to God that we can ever know

or recognise any truth concerning Him. To those who have decided this question in the negative, the whole system and language of Christianity (nay, even the whole system and language of the barest Theism) must become incredible. There are, of course, many forms and degrees of doubt touching this question—from those which represent nothing more than a painful sense of the inadequacy of our highest conceptions concerning the Divine nature, down to those which have hardened into a scornful determination to reject all theological belief as belonging to the Inaccessible and Unknown. I do not doubt that almost every gradation between these two very different states of mind is to be found among us. But surely a great approach must have been made to the darkest and saddest of all conclusions, when we find that the most necessary and fundamental conceptions of mind, such as those of Purpose and Design and Will—and still more the moral affections of love

on the one hand and righteous indignation on the other—when the very idea of a moral government, and of dealings which admit of any answer to prayer—are all declared to be inconceivable as applied to God, and are habitually denounced as "Anthropomorphic." This, as you are probably aware, is the common phrase which the "know nothing," or Agnostic School of Philosophy, are perpetually using. We cannot look into a popular magazine without seeing it habitually applied to any and every religious conception which the writer happens to dislike, or finds it difficult to believe. Similar words and phrases have always played an important part in the history of speculation, from the facility with which they lend themselves to loose and inaccurate thought, and the equal facility with which they can be made to conceal mere antipathies of feeling under the guise of logical forms. There is another phrase closely connected with anthropomorphism

which is now widely employed in a similar manner. I mean "The Supernatural." The two things which men now find it impossible to believe in are "Anthropomorphism" and "The Supernatural." Anything and everything which can be brought under the ban of these epithets is treated as childish and incredible. Let us insist, then, at least on a clear definition of their meaning.

"Anthropomorphism," as doubtless you all know, is, literally translated, "Man-form-ism"—that is to say, the system of shaping our conceptions of the ruling power in nature, or of the Divine Being, upon the conscious knowledge we have of our own nature and attributes. "Humanism" might be another word expressive of the same general idea. It is, as it were, an opprobrious epithet which can be readily attached to every attempt to bring the human mind into any definite relations with the supreme agencies of Nature. The central idea of those who so use it,

seems to be that there is nothing Human there, and that when we think we see it there we are like some foolish beast wondering at its own shadow. The proposition, therefore, which is really involved, when stated nakedly, is this: that there is no mind in nature having any relation with or similitude to our own, and that all our fancied recognitions of such mental manifestations as those of Purpose or Design, whether in Creation or in Providence, are delusive imaginations.

Observe now the connection between this phrase of Humanism or "Anthropomorphism," and that other phrase which is now equally used in a condemnatory sense —"The Supernatural." Of course this phrase means literally that which is "above nature," or "outside of nature." Those who deny the Supernatural simply deny that there is anything above or outside of nature. But obviously this denial has no meaning unless the word "nature" be defined. If nature be taken to mean the

"Sum of all Existence," then, of course, it is a mere truism to say that there is nothing above nature. And this is the conception which unconsciously occupies many minds when they talk about "The Supernatural." This is the conception which gives to the denial of the Supernatural all its plausibility. But I need not say that in this sense we must all reject the Supernatural, for there can be nothing above or outside the "Sum of all Existence." If, on the other hand, "nature" be understood to mean physical nature only—that is to say, the material elements and forces of nature—then the denial of anything above it assumes a special meaning. It means that there is no *mind* recognisable as like our own, and standing in any relation to physical nature which we can imagine to have any analogy with our own. In short, the human mind is the type of the Supernatural; and it is the seeing of anything like that mind, either in nature or outside of it, that is de-

nounced as Humanism or "Anthropomorphism." Perhaps it may sound strange in your ears to say that man is ever regarded as the type of the "Supernatural"—as not belonging to nature at all, but as the one thing or being which is contradistinguished from nature. And yet we must all be aware that this is implied in the commonest use of language; as when we speak of the works of man as of a different kind from the works of nature. But it may occur to you to doubt how far this idea is really to be found in the language of philosophy. I have, however, not far to go to be able to show you that the same idea is almost unconsciously involved in the language of our most distinguished scientific men. On the very first page of Professor Tyndall's address to the British Association at Belfast, I find the following passage:—"Our earliest historic ancestors fell back also upon Experience; but with this difference—that the particular experiences which furnished the

weft and woof of their theories were drawn, *not* from the study of *nature*, but from what lay much closer to them—the observation *of men*." Now here you observe that man is especially contradistinguished from nature: and accordingly we find in the succeeding sentence that this idea is connected with the error of seeing ourselves—that is, the Supernatural—in nature. "Their theories," the Professor goes on to say, "accordingly took an anthropomorphic form." At p. 41 of the same Address, the same antithesis is still more distinctly expressed thus:—"If Darwin rejects the notion of creative power *acting after human fashion*, it certainly is not because he is unacquainted with the numberless exquisite adaptations on which this notion of a *supernatural artificer* has been founded." Here you see that the idea of "acting after human fashion" is treated as synonymous with the "idea of a Supernatural Artificer"; and the same identification you will find

running throughout the language which is now commonly employed in denouncing Anthropomorphism and the Supernatural.

The two propositions, therefore, which are really involved in the thorough-going denial of Anthropomorphism and of the Supernatural are the following:—(1) That there is nothing above or outside of physical nature; (2) That in nature there is no mind having analogies with our own.

It seems to me that half the battle has been won when this definition has been attained. In the first place, observe the strange and anomalous position in which it places man. As regards at least the higher faculties of his mind, he is allowed no place in nature, and no fellowship with any other thing or any other Being outside of nature. He is absolutely alone—out of all relation to the Universe around him, and under a complete delusion when he sees in any part of it any mental homologies with his own intelligence, or with his own will, or with his own affections.

Does this absolute solitariness of position as regards the higher attributes of man—does it sound reasonable, or possible, or consistent with some of the most fundamental conceptions of Science? How, for example, does it accord with that great conception whose truth and sweep become every day more apparent—the Unity of Nature? How can it be true that man is so outside of that unity that the very notion of seeing anything like himself in it is the greatest of all philosophical heresies? Does not the very possibility of science consist in the possibility of reducing all natural phenomena to purely mental conceptions, which must be related to the intellect of man when they are worked out and apprehended by it? And if, according to the latest theories, man is himself a Product of Evolution—whatever that may mean—and is therefore, in every atom of his body and in every function of his mind, a part and a child of nature, is it not in the highest degree illogical and absurd so to

separate him from it as to condemn him for seeing in it some image of himself? If he is its product and its child, is it not certain that he is right when he sees and feels the indissoluble bonds of unity which unite him to the great system of things in which he lives? And is not the irony of this "know nothing" philosophy complete when we find that the very men who tell us we are not one with anything above us are the same who insist that we are one with everything beneath us? Whatever there is in us, or about us, which is purely animal we may see everywhere; but whatever there is in us purely intellectual and moral—we delude ourselves if we think we see it anywhere. There are abundant homologies between our bodies and the bodies of the beasts, but there are no homologies between our minds and any mind which lives or manifests itself in nature. Our livers and our lungs, our vertebræ and our nervous systems, are identical in origin and in function with those of the living creatures

round us; but there is nothing in nature or above it which corresponds to our forethought, or design, or purpose—to our love of the good or our admiration of the beautiful—to our indignation with the wicked, or to our pity for the fallen. This is the philosophy of the language now so common, which represents as unbelievable anything "Anthropomorphic" or anything "Supernatural."

I venture to think that no system of philosophy that has ever been taught on earth lies under such a weight of antecedent improbability; and this improbability increases in direct proportion to the success of Science in tracing the Unity of Nature, and in showing step by step how its laws and their results can be brought more and more into direct relation with the mind and intellect of man.

Let us test this philosophy from another point of view, and see how far it is consistent with our advancing knowledge of those combinations of natural force by which the

system of the physical universe appears to be sustained.

You will often see in the writings of our great physical teachers of the present day reference made to a celebrated phrase of the old and abandoned school of Aristotelian physics—a phrase invented by that old school to express a familiar fact—that it is extremely difficult, if not absolutely impossible, to produce a perfect vacuum—that is to say, a space which shall be absolutely empty. The phrase was this: "Nature abhors a vacuum." It is now continually held up as a perfect example and type of the habit of thought which vitiates all true physical reasoning. Now let us observe what this error is. As a forcible and picturesque way of expressing a physical truth—that the difficulty of producing a vacuum is extreme, that Nature sets, as it were, her face against our doing it—the phrase is a good one, and conveys an excellent idea of the general fact. Sir W. Grove says of it, that it is "an aphorism

which, though cavilled at and ridiculed by the self-sufficiency of some modern philosophers, contains in a terse though somewhat metaphorical form of expression a comprehensive truth." * But there is this error in the phrase (if indeed it was or ever could be literally understood)—that it gives for the general fact a wrong cause, inasmuch as it ascribes to the material and inanimate forces of nature, whose simple pressures are concerned in the result, certain dispositions which are known to us as affections of mind alone. In short, it ascribes to the mere elementary forces of matter — not to a living agency using these as tools, but to mere material force — the attributes of mind.

Now it is well worthy of remark that, so far as this error is concerned, the language of our modern Physicists is full of it—steeped in it ; and that in this sense they

* "The Correlation of Physical Forces," 6th Ed., p. 121.

are chargeable with a kind of anthropomorphism which is really open to the gravest objection. To see mind in nature, or, according as nature may be defined, to see mind outside of nature, acknowledging it to be mind, and treating it as such—this is one thing—and this is the true and legitimate anthropomorphism, which our Physicists denounce. But to see mind in material forces alone, and to ascribe its attributes to them—this is equally anthropomorphism, but a perversion of it which deserves all the reprobation they express. This, nevertheless, is the anthropomorphism which gives habitually its colouring to their thoughts, and its spirit to their language.

Let me explain what I mean by some examples. I will take, first, the Darwinian Theory of Development, which, as applied to the history of animal life, is now accepted by a large number of scientific men if not as certainly true, at least as an hypothesis which comes nearer than any other

to the truth. I have never been among the number of those who think this theory in the least degree inconsistent with the great Theistic arguments of Natural Religion. When we ask a child who made it, and expect it to reply that God made it, we never suppose that the child must cease to give this answer when it comes to understand that it was born from parents. Nor, in like manner, should we imagine that the Divine Authorship of our being must come to be disbelieved, should it ever be really proved that all creation has been effected in the same way. But there is more to be said than this about the Theistic aspects of the Darwinian theory. It is saturated throughout with the ideas of utility, and fitness, and of adaptation, as the governing principles and causes of the harmony of nature. Its central conception is, that in the history of organic life changes have somehow always come about exactly in proportion as the need of them arose,—or rather, in proportion

as the need of them was about to arise. For as it is an essential part of the theory that each particular change has been infinitesimally small, and can never have been preserved unless it tended in a particular direction, every new organ and every new adaptation of an organ must have had an incipient stage, when its utility was all to come,—that is to say, when its adaptation to external things lay in the future, and when therefore the nascent adjustments can only be conceived of as preparations for a use not yet in actual operation. And even when such changes have reached the stage where the influence of utility comes into actual operation, it is clear that that conception of the constitution of things which converts utility into a physical cause, is a conception necessarily involving the idea of purposive adaptation. This purely mental element in the facts is, of course, more clearly seen when we have to ask ourselves why organic variations should take a direction terminating in

utility when as yet there is no actual use developed. But the same mental element is in reality equally involved in those later stages, when utility has actually emerged and has begun to play. For why is it that the laws of growth are so correlated with utility that they should in this manner work together? Why should varied and increasing utility operate in the requisite direction of varied and increasing developments? The connection is not one of logical necessity, but purely and solely one of purposive arrangement. Not only can we conceive it otherwise, but we know that it is otherwise beyond certain bounds and limits. It is not an universal law that organic growths arise in proportion to all needs, or are strengthened by all exertion. It is a law prevailing only within certain limits; and it is not possible to describe the facts concerning it without employing the language which is expressive of mental purpose. Accordingly, Mr. Darwin himself does use this language perpetually,

and to an extent far exceeding that in which it is used by almost any other Natural Philosopher. The very title of one of his most interesting works is "On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects." I have elsewhere * remarked upon the constant recurrence of what is called teleological language in Mr. Darwin's works. He does not use it with any theological purpose, nor in connection with any metaphysical speculation. He uses it simply and naturally for no other reason than that he cannot help it. The correlation of natural forces, so adjusted as to work together for the production of use in the functions and in the enjoyments and in the beauty of life,—this is the central idea of his system; and it is an idea which cannot be worked out in detail without habitual use of the language which is moulded on our own consciousness of Design, and of Purpose, and of Adjust-

* Reign of Law, ch. i.; 5th Ed., pp. 38-9.

ment. This is what perhaps the greatest observer that has ever lived always observes in nature. And so his language is thoroughly anthropomorphic. Seeing in the methods pursued in nature a constant embodiment of his own intellectual conceptions, and a close analogy with the methods which his own mind recognizes as "contrivance," he rightly uses the forms of expression which convey the work of mind. "Rightly," I say, provided the full scope and meaning of this language be not repudiated. I do not mean that Naturalists should be always following up their language to theological conclusions, or that any fault should be found with them when they stop where the sphere of mere physical observation terminates. But those who assume to remodel philosophy upon the results of that observation cannot be allowed to use all the advantage of anthropomorphic language, and then to denounce it when it carries them beyond the point at which they desire to stop. Professor Tyndall,

in his Address at Belfast, tells us that Darwin rejects Teleology. So far as I know, Mr. Darwin himself has never said so. On the contrary, he has said that the "mind revolts" against such adjustment as he describes being "the result of Chance." The opposite of Chance is, of course, Purpose and Design. The theory of Development is, in my opinion, not only consistent with teleological explanation, but it is founded on Teleology, and on nothing else. It sees in everything the results of a system which is ever acting for the best—always producing something more perfect or more beautiful than before, and incessantly eliminating whatever is faulty or less perfectly adapted to every new condition. Professor Tyndall himself cannot describe this system without using the most intensely anthopomorphic language: "The continued effort of animated nature is to improve its conditions, and raise itself to a loftier level."*

* Pref. to Address, p. xxv.

Again I say,—Quite right to use this language, provided its ultimate reference to Mind be admitted and not repudiated. But if this language be persistently applied, and philosophically defended, as applicable to material force, otherwise than as the instruments and tools of mind, then it is language involving far more than the absurdity of the old mediæval phrase that "Nature abhors a vacuum." It ceases to be a mere picturesque expression, and becomes a definite ascription to matter of the highest attributes of mind. If nature cannot feel abhorrence, neither cannot it cherish aspirations. If it cannot hate, neither can it love, nor contrive, nor adjust, nor look to the future, nor think about "loftier levels" there.

Professor Tyndall in the same Address has given us an interesting anecdote of a very celebrated man whom the world has lately lost. He tells us that he heard the great Swiss naturalist, Agassiz, express an almost sad surprise that the Darwinian

Theory should have been so extensively accepted by the best intellects of our time. And this surprise seems again in some measure to have surprised Professor Tyndall. Now it so happens that I have perhaps the means of explaining the real difficulty felt by Agassiz in accepting the modern theory of Evolution. I had not seen that distinguished man for nearly five-and-thirty years. But he was one of those gifted beings who stamp an indelible impression on the memory; and in 1842 he had left an enthusiastic letter on my father's table at Inveraray on finding it largely occupied by scientific works. Across that long interval of time I ventured lately to seek a renewal of acquaintance, and during the year which proved to be the last of his life I asked him some questions on his own views on the history and origin of Organic Forms. In a reply which I shall always very highly value, Agassiz sums up in the following words his objection to the Theory of Natural Selection as affording any

satisfactory explanation of the facts for which it professes to account: "The truth is that Life has all the wealth of endowment of the most comprehensive mental manifestations, and none of the simplicity of physical phenomena." Here we have the testimony of another among the very greatest of modern observers, that wealth —immense and immeasurable wealth—of mind is the one fact above all others observable in nature and especially in the adaptations of organic life. It was because he saw no adequate place or room reserved for this fact in the Theory of Development, that Agassiz rejected it as satisfying the conditions of the problem to be solved. Possibly this may be the fault of the forms in which it has been propounded, and of the perverse endeavours of too many of its supporters to shut out all interpretations of a higher kind. But of this we may be sure—that if men should indeed ultimately become convinced that species have been all born just as individuals are now all born, and that

such has been the universal method of creation, this conviction will not only be found to be soluble—so to speak—in the old beliefs respecting a personal Creator, but it will be unintelligible and inconceivable without them,—so that men in describing the history and aim and direction of Evolution will be compelled to use substantially the same language in which they have hitherto spoken of the History of Creation.

I will mention another case of the unconscious anthropomorphism of scientific language and speculation. Some of you may have read, or may have heard of, a very able and curious paper by Professor Huxley, lately published in the *Contemporary Review*, on the old problem whether animals may not be considered as "mere machines." Professor Huxley—rather, I think, for the sake of a little intellectual exercise than anything else—takes the affirmative view of this question, and brings forward most ingenious arguments in its favour. He is pleased, he says,

to think that in this question, so long as it is confined to the lower animals, he comes across no religious prejudice; and when, later in the article, he admits that the same arguments raise the same question in respect to man, he says that on this ground he fears to tread, lest it should bring down upon him the intolerable noise of the "Drum Ecclesiastic." He goes on, however, to show that questions fundamentally the same have been raised by Theologians themselves; and points to the Augustinian or Calvinistic doctrine of Predestination, and to the Philosophical doctrine of Necessity, as in reality so many different attempts to deal with the same intellectual difficulty. But there is a view of this question which never seems to have struck Professor Huxley—and, indeed, for that matter, does not seem to have been ever sufficiently considered; and that is, that it is entirely a question of verbal definition whether animals may be considered as machines or not. For

my own part, I have no doubt whatever that in one sense, and that a very important sense, the lower animals, and man too, are all machines. For what is at least one essential idea of a machine? It is something so contrived by some intelligence, that it shall have certain powers, and discharge certain functions. Considered in this aspect alone, it does not matter to the idea of a machine what the powers may be that it has,—what the functions are that it may perform. It may do something very simple, or something very complicated; but whatever it has in respect to power is derived and not original. It is due to the working of its maker's mind that the machine works at all; and the measure of its operations is that assigned to it by the knowledge and the resources and the intention of its constructor. You will see, then, at once, that the theory which makes out animals to be automata or machines is entirely anthropomorphic, and is founded

on a true perception of the anthropomorphism which prevails in nature. In one respect, of course, it is admitted on all hands that machines made by man differ essentially from the animated machines existing in nature. They are not only infinitely more ingenious; but the things they are made to do, and the functions they are constructed to discharge, are infinitely higher, inasmuch as these are all connected with the Divine gifts of life. This difference is indeed so great that it is only by a somewhat violent metaphor that we can apply to both the same descriptive term. Those who have contended that animals are automata or machines, have always admitted that they are machines which feel, and perceive, and see, and have all the lower or mere animal passions which belong to life. What they say is, that this fact does not take them out of this category of machines. Neither does it—if we are agreed on the abstract definition of a machine,—that it

is anything constructed by an intelligent mind. Of course, in another sense, and under another definition, it is pure nonsense to talk of a machine that sees and feels,—because these are things that we cannot make a machine do ; and therefore our type-idea of a machine is of something which never does, and never can, possess these powers. But if it be agreed that the word machine shall import no more than the same relation to an external constructive agency (call it what you will) —that a watch bears to a man,—then it is unquestionably true that the lower animals are machines, and every argument of Professor Huxley in favour of this conclusion is only one more proof added to the many and subtle demonstrations which prove the intense anthropomorphism of nature. Moreover, I go a step further. If the word machine be so extended as to include feeling and seeing and percipient machines, it may equally well be understood to include thinking and reflecting and reasoning

machines, with a certain limited and delegated freedom of the will. And such, indeed, is man. There is no heresy in this. On the contrary, it is the profoundest of all truths—that truth which echoes in the Psalm so familiar to us all: "It is He that made us, and not we ourselves."

It is true, indeed, that there is the deepest and widest of all distinctions between the machines which we can make, and those mechanical aspects under which, by dint of abstract definition, all animals can be regarded—even that distinction which separates the Living from the Not-Living. But here, again, we come upon one of the peculiarities of the new school of philosophy—which is a persistent desire to explain away this distinction, to get rid of the very idea of Life as a thing by itself—known to us by phenomena and properties which are separate from all others. The endeavour is perpetually made to reduce it within the terms of some purely physical definition. But even in this attempt, vain and futile as

I believe it to be, we shall find that the most eminent disciples of this school are wholly unable to avoid anthropomorphic language—and, wriggle as they may, are compelled to make use of the analogies of our own mental operations as the only possible exponents of what we see in nature. Look, for example, at the definition of Life given by Mr. Herbert Spencer. It is a very old endeavour to construct such definitions, and not a very profitable one; inasmuch as life is only known to us as itself, and all attempts to reduce it to other conceptions are generally mere playing with empty words. But it is not without instruction to observe that Mr. Spencer's laborious analysis comes to this: "Life is the continuous adjustment of internal relations to external relations." Now I will not waste your time to examine the verbal evasions which are hid under this formula of language; but I beg you to observe that, however evasive and inadequate it may be as a

definition of what life in itself is, it does contain one definite and distinct idea as to how life comes to be. Life is an "adjustment." I need not tell you that this is a purely anthropomorphic conception, conveying the idea of that kind of co-ordination between different powers or elements which is the result and evidence of design and of constructive skill. All combinations are not adjustments. No combination can properly be called an adjustment if it be purely accidental. We should never think of saying that the rust of iron is an adjustment between oxygen and iron. Chemical combinations are only to be called adjustments when they are the result of skill and knowledge in so bringing chemical affinities to bear on each other as to produce a given and a foreseen result. When, therefore, Life is represented as an "adjustment," this is the mental image which is reproduced ; and in so far as it does reproduce this idea, and does consciously express it, the formula has at least some intelligible

meaning. If, indeed, it can be said to have any plausibility or approach to truth at all, this is the element in it from which that plausibility is derived.

Well, then, I pass to another well-known author—to Mr. Matthew Arnold, who has been lately denouncing, in scornful terms, all belief in that "popular" theology which includes Anthropomorphism and the Supernatural, and who objects to the very conception of what is called a Personal God. He has invented a new phrase for the Divine Being, which alone, he thinks, can be used as descriptive of any Existence that can be proved—and what is it? "The Eternal, not ourselves, which makes for righteousness." Surely whatever meaning there may be in this artificial and cumbrous phrase is entirely derived from its anthropomorphism. An agency which makes for something—that something being in the future, and being also in itself an abstract moral and intellectual conception—what can such an agency be conceived to be?

Making for an object of any kind is a purely human image—an image, too, derived primarily not from the highest efforts of human will, but from those which are represented in the exercises of the body, and the skill with which, in athletic contentions, some distant goal can be reached and won. This is Mr. Matthew Arnold's attempt to leap off his own shadow, and to instruct us how we are to think of God without seeing anything in Him, or in His world, analogous to our own methods of thought and work!

Nor is it wonderful that this attempt should fail, when we consider what it is an attempt to do—to establish an absolute separation between Man and Nature; to set himself up as something above it, and outside of it; and yet to affirm that there is no other Being, and no other Intelligence, in a like position. And if anything can render this attempt more absurd, it must be the further attempt to reach this result through science,—science, the very possi-

bility of which depends on and consists in the possibility of reducing all natural phenomena within the terms of human thought, so that its highest generalisations are always the most abstract intellectual conceptions. Science is the systematic knowledge of relations; and that which perceives relations must be itself related. All explanation consists in nothing else than in establishing the relation which some order of external facts bears to some corresponding order of thought; and it follows from this truth, that the highest explanations of phenomena must always be those which establish such relations with the highest faculties of our nature. Professor Tyndall, in another part of his late address, like many other writers of the present day, goes the length of saying that the great test of physical truth is what may be called its "representability"—that is to say, the degree in which a given physical conception can, from the analogies of experience, be represented in thought. But if our power

of picturing a physical fact distinctly be indeed an indication of a true physical analogy, how much more distinctly than any physical fact can we picture the mental characteristics of Purpose, and of Design, and of Will! Yet these are the conceptions which we are told we are not to cherish, because of the very fact that they are anthropomorphic—or in other words because of the very fact that they are so familiar to us, and their mental representability is so complete!

Some, indeed, of our physical teachers, conscious of this necessary and involuntary anthropomorphism of human thought and speech, struggle hard to expel it by inventing phrases which shall as far as possible avoid it. But it is well worthy of observation, that in exact proportion as these phrases do avoid it, they become incompetent to describe fully the facts of science. For example, take those incipient changes in the substance of an egg by which the organs of the future animal are successively

laid down "when as yet there are none of them,"—changes which have all reference to a purely purposive adaptation of that substance to the future discharge of separate and special functions, — these changes you will now often see described as "differentations," an abstract expression which simply means the establishment of differences, without any reference to the peculiar nature of those differences, or their relations to each other and to the whole. The processes of dissolution and decay are processes of differentiation as much as the process of growth and adaptation to living functions. Blood is differentiated when, spilt upon the ground, it separates into its inorganic elements, just as much as when, circulating in the vessels, it feeds the various tissues of the living body. There does not seem to be much light in that philosophy which insists on using the same formula of expression for operations so different as these. It is a phrase which empties the facts, as we can

see and know them, of all that is special in that knowledge. It is possible, no doubt, by this and other similar artifices of language, so to describe physical phenomena as to deprive them—or at least to appear to deprive them — of their highest mental characters. More foolish than the fabled ostrich, we may try to shut our eyes against our own perceptions, or refuse to register them in our language—resorting, for the sake of evasion, to some juggleries of speech. "Potential existence" is another of those vague abstract conceptions which may be, and is, employed for a like purpose. It may be applied to a mere slumbering force, or to an unfulfilled intention, or to an undeveloped mental faculty, or to an elaborate preparation of foresight and design. If we desire to take refuge from the necessity of forming any distinct conceptions, such phrases are eminently convenient for the purpose, whilst under cover of them we may cheat both ourselves and others into the belief that we

have got hold of some definite idea, and perhaps even of an important truth.

My advice to young men who are puzzled and perplexed by the prevalent teaching of Physicists on these high matters is to subject the language in which they convey that teaching to a careful, systematic, and close analysis. I think you will find it fall within one or other of these three classes:—First, there is the phraseology of those who, without any thought either of theological dogma or of philosophical speculation, are, above all things, Observers, and who describe the facts they see in whatever language appears most fully and most naturally to convey what they see to others. The language of such men is what Mr. Darwin's language almost always is—eminently teleological and anthropomorphic. Next, there is the language of those who purposely shut out this element of thought, and denounce it as unscientific. The language of this class is full of the vague abstract phrases to which I have referred—"differentiation"—"mo-

lecular change"—"harmony with environment"—and others of a like kind,—phrases which, in exact proportion to their abstract character, are evasive, and fall short of describing what is really seen. Lastly you have the language of those who habitually ascribe to matter the properties of mind; using this language not metaphorically, like the old Aristotelians whom they despise, but literally,—declaring that mind, as we know it, must be considered as having been contained "potentially" in matter, and was once nothing but a cosmic vapour, or a fiery cloud. Well may Professor Tyndall call upon us "radically to change our notions of matter," if this be a true view of it; for in this view it becomes equivalent to "nature" in that largest and widest interpretation to which I referred at the commencement of this lecture—viz., that in which nature is understood as the "Sum of all Existence." But if this philosophy be true, let us at least cease to condemn, as the type of all absurdity, the

old mediæval explanations of material phenomena, which ascribes them to affections of the mind. If matter be so widened in meaning as to be the mother and source of mind, it must surely be right and safe enough to see in it those dispositions and phenomena which are nothing but its product in ourselves.

The truth is, that this conception of matter and of nature, which is associated with vehement denunciations of anthropomorphism—is itself founded on nothing else but anthropomorphism pushed to its very farthest limit. It is entirely derived from and founded on the fact that mind, as we see it in ourselves, is in this world inseparably connected with a material organism, and on the further assumption, that mind is inconceivable except in the same connection. This would be a very unsafe conclusion, even if the connection between our bodies and our minds were of such a nature that we could not conceive the separation of the two. But so far is this

from being the case, that, as Professor Tyndall most truly says, "it is a connection which we know only as an inexplicable fact, and we try to soar in a vacuum when we seek to comprehend it." The universal testimony of human speech—that sure record of the deepest metaphysical truths—proves that we cannot but think of the body and the mind as separate—of the mind as our proper selves, and of the body as indeed external to it. Let us never forget that life, as we know it here below, is the antecedent or the cause of organization, and not its product; that the peculiar combinations of matter, which are the homes and abodes of life, are prepared and shaped under the control and guidance of that mysterious power which we know as vitality; and that no discovery of science has ever been able to reduce it to a lower level, or to identify it with any purely material force. And, lastly, we must remember that even if it were true—if it were even conceivably established that Life and Mind

have some inseparable connection with the forces which are known to us as material—this would not make the supreme agencies in nature, or nature as a whole, less anthropomorphic, but greatly more; so that it would, if possible, be even more absurd than it is now to condemn man when he sees in nature a mind having real analogies with his own.

And now, what is the result of this argument?—what is its scope and bearing? Truly it is a very wide scope indeed, and more than one separate lecture would be required to exhaust its bearings. Suffice it to say here that everything in Belief—in Theology—in Philosophy—which is condemned on the sole ground that it is anthropomorphic—everything is re-established—I don't say as true—but as believable unless open to some better and more rational objection than that it rests on the analogies of Human Thought. No adverse presumption can arise on this ground alone against any doctrine, whether of religion

or philosophy. This is a position—purely negative and defensive though it be—from which we cannot be dislodged; and which has under its destructive fire a thousand different avenues of attack. There are not a few able and popular writers at the present moment, who boast that belief in Christianity, and indeed in every form of Theology, is being slowly, but surely, driven out from the minds of men. They say that just as belief in Witchcraft became almost extinct, not because of any logical proof of its impossibility, but simply because of the rise and steady growth of other beliefs which were incompatible with it, and insensibly cast it out—so, in like manner, the Theology of the Churches is being as surely displaced by ideas and conceptions, the growth of science, which are fatal to every existing faith. Others there are who do not go quite so far, but who maintain that these same new ideas and conceptions will compel the abandonment of much, if not of all, that is

distinctive in the history and teaching of Christianity. Prominent among the ideas and conceptions to which this work is assigned—powerful above all others in effecting the displacement of all our old beliefs—is the idea that anything "Anthropomorphic" or "Supernatural" is in itself unbelievable. It has been my object to-night to bring this idea to the bar of reason, and to show you how it bears examination. Follow up that examination as you may—pursue into every nook and cranny of speculation, and through every form of language in which it is expressed, and you will find it rotten to the core, inconsistent, incoherent, self-condemned. Man—he whom the Greeks called Anthrōpos, because, as it has been supposed, he is the only Being whose look is upwards—man is a part of Nature, and no sophistry can expel him from it. And yet, in another sense, it is also true that Man is above Nature—outside of it—and in this aspect he is the very type and image of the Super-

natural. The instinct of Unbelief, which sees this image in him, is a true instinct; and the consequent desire to banish Anthropomorphism from our conceptions of Nature is intelligible enough. For if we are allowed to see in Nature the operations of a mind having analogies with our own, then this power, which is to silence prayer and to expel all notion of a Personal God, and to seat blind mechanical necessities upon the throne of Nature—this horrid shape—will be itself expelled. Yes, and so it will. Every advance of science is a new testimony to the supremacy of mind, and to the correspondence between the mind of man and the Mind which is supreme in Nature. Nor in the face of Science will it be possible to revive that Nature-worship, which breathes in so many of the old religions of mankind. For in exalting mind, Science is ever making plainer and plainer the inferior position of the purely physical aspects of Nature—the vassal character of matter and of material force.

Has not science, for example, even in these last few years, rendered impossible for ever one of the oldest and most natural of the idolatries of the world? Has it not disclosed to us much of the physical constitution of that great heavenly body, which is the proximate cause of all that we see and enjoy on earth, and which has seemed most naturally the very image of the Godhead to millions of the human race? We now know the sun to be simply a very large globe of solid and of gaseous matter, in a state of fierce and flaming incandescence. No man can worship a ball of fire, however big; nor can he feel grateful to it, nor love it, nor adore it, even though its beams be to him the very light of life. Neither in it nor in the mere physical forces of which it is the centre, can we see anything approaching to the rank and dignity of even the humblest human heart. "What know we greater than the soul?" It is only when we come to think of the co-ordination and adjust-

ment of these physical forces as part of the mechanism of the Heavens,—it is only, in short, when we recognize the mental—that is the anthropomorphic—element, that the universe becomes glorious and intelligible, as indeed a Cosmos—a system of order and beauty adapted to the various ends which we see actually attained, and to a thousand others which we can only guess. Surely that philosophy will never stand its ground which allows that we can see in Nature the most intimate relations with our intellectual conceptions of Space and Time and Force, but denies that we can ever see any similar relation with our conceptions of Purpose and of Design, or with those still higher conceptions which are embodied in our sense of Justice and in our love of Righteousness, and in our admiration of the "quality of Mercy." Surely these elements in the mind of man are not less likely than others to have some correlative in the Mind which rules in Nature. Surely in the supreme govern-

ment of the universe they are not less likely than other parts of our mental constitution to have some system related to them—so related that the knowledge of it shall be at once their interpretation and fulfilment. Certain it is that neither brute matter nor inanimate force can supply either the one or the other. If there be one truth more certain than another, one conclusion more securely founded than another, not on reason only, but on every other faculty of our nature, it is this—that there is nothing but mind that we can respect—nothing but heart that we can love—nothing but a perfect combination of the two that we can adore.

Far be it from me to deny that we are surrounded by mystery, and that perhaps the deepest of all mysteries concerns the limits within which we can, and beyond which we cannot, suppose that we bear the image of Him who is the Source of Life! It seems as if on either side our

thoughts are in danger of doing some affront to the Majesty of Heaven—on the one side if we suppose the Creator to have made us with an intense desire to know Him, but yet destitute of any faculties capable of forming even the faintest conception of His nature:—on the other side, if we suppose that creatures such as, only too well, we know ourselves to be, can image "the Holy One who inhabiteth eternity." And yet both aspects of the truth are powerfully represented in the language of those who at sundry times and in divers manners have been, as we believe, commissioned to speak to the world on Divine things. On the one hand we have such strong but simple images as those which represent the Almighty as "walking in the garden in the cool of the day," or as "speaking to Moses face to face as a man speaketh with his friend." On the other hand we have the solemn and emphatic declaration of St. John that "No man hath seen God at any

time." In the Book of Job we have at once the most touching and almost despairing complaints of the inaccessibility and inscrutability of God, and also the most absolute confidence in such a knowledge of His character as to give the firmest support to unbounded trust. In the Psalms we have these words addressed to the wicked as conveying the most severe rebuke: "Thou thoughtedst that I was altogether such an one as thyself" (Ps. l. 31). And perhaps this word "altogether" indicates better than any other the true reconciliation of apparent contradictions. In the far higher light which Christianity claims to have thrown on the relations of man to God, the same solution is in clearer terms presented to us. "We know in part and we prophesy in part. We see through a glass darkly." And yet our nature is so far nearly related to the Divine Nature that some things can be "clearly seen—even His eternal Power and Godhead." Moreover Christianity, I think, assumes

that we have faculties enabling us to recognize certain truths which we could not have discovered for ourselves. It seems to me that the very sense of mystery which is sometimes so oppressive to us confirms this representation of the facts. For this sense of oppression can only arise from some organs of mental vision watching and waiting for a light which they have been formed to see, but from which our own investigations cannot lift the veil. If that veil is to be lifted at all, the evidence is that it must be lifted for us. Physical Science does not even tend to solve any one of the ultimate questions which it concerns us most to know, and which it interests us most to ask. It is according to the analogy and course of Nature that to these questions there should be some answering voice, and that it should tell us things such as we are able in some measure to understand. Nor ought it to be thought a thing incredible with us that the system disclosed should be in a sense

anthropomorphic—that is to say, that it should bear some near relation to our own faculties of mind and soul and spirit. For all we do know, and all the processes of thought by which knowledge is acquired, involve and imply the truth that our mind is indeed made in some real sense in the image of the Creator, although intellectually its powers are very limited, and morally its condition is very low.

In this conclusion as well answering all the facts—full of mystery though they be—the very greatest teachers and seers in Physical Science, not less than the greatest apostles and prophets of Revelation, have been content to rest. Lord Bacon, the author of the "Novum Organon"—he who laid down that system of investigating nature on which all progress in physics has been founded—has expressed in noble language the spirit in which the student of nature should conduct his investigations—neither expecting from his own mind the solution of all difficulties—nor distrusting

its power to recognize partial revelations of the truth. Let me conclude with his

STUDENT'S PRAYER.

To God, the Father, God, the Word, God, the Spirit, we pour forth most humble and hearty supplications, that He, remembering the calamities of mankind and the pilgrimage of this our life, in which we wear out days few and evil, would please to open to us new refreshments out of the fountains of His goodness for the alleviating of our miseries. This, also, we humbly and earnestly beg that human things may not prejudice such as are Divine; neither that from the unlocking of the gates of sense, and the kindling of a greater natural light, anything of incredulity or intellectual night may arise in our minds towards the Divine mysteries. But rather that by our mind thoroughly cleansed and purged from fancy and vanities, and yet subject and perfectly given up to the Divine oracles, there may be given unto Faith the things that are Faith's. *Amen.*

On the Hypothesis that Animals are Automata.

A REPLY TO PROFESSOR HUXLEY'S ADDRESS BEFORE THE BRITISH ASSOCIATION, AT THE LATE MEETING IN BELFAST.

BY THE

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II.

ON THE HYPOTHESIS THAT ANIMALS ARE AUTOMATA.

THIS lecture owes its origin to certain proceedings connected with the recent meeting of the British Association in Belfast. The programme embraced two public lectures—one by Professor Tyndall, and the other by Professor Huxley. The former was inaugural, the latter was voluntary. These lectures now constitute a portion of the history of the learned body under whose auspices they were delivered, and have brought about a crisis in its organic life. They have revealed to all men what to many needed no revelation—

that between theism and atheism there can be no fellowship on the field of science. These lectures were an open proclamation of war—of war, not simply against Christianity, but of war against the fundamental truth of all religion and morality—of war against the idea of a personal God. Having thrown down the gauntlet on the platform of the Ulster Hall, in terms by no means complimentary, the lecturer who tendered it declined to meet, face to face, on that same platform, those who accepted the challenge. There was, therefore, no alternative left to men who are set for the defence of religion and public morals, thus ruthlessly assailed, but to examine, in some such way as the present, the arguments advanced by these eminent atomic, molecular chiefs. As my reply to Dr. Tyndall's Atomic Theory of the Universe is already published, I shall, in this paper, devote my attention to the examination of Professor Huxley's lecture on the Automatism of Animal Organisms.

As an apology for venturing to criticise the arguments of so high a physiological authority, I may be permitted to avail myself of one furnished by Professor Huxley himself, in his reply to Sir Wm. Thomson's Essay on Geological Time: "It is true that the charges brought forward by the other side involve the consideration of matters quite foreign to the pursuits with which I am ordinarily occupied; but, in that respect, I am only in the position which is, nine times out of ten, occupied by counsel, who nevertheless contrive to gain their causes, mainly by force of mother-wit and common sense, aided by some training in other intellectual exercises." Armed by such a precedent, and knowing, as a matter of fact, that Professor Huxley's "training" in physiology has not made him a psychologist, "I proceed to put my pleading before you."

At the outset it is but due to this eminent physiologist to say that, notwith-

standing the temper revealed at the close of his lecture in the nicknames by which he indicated his estimate of the morality and intelligence of Christian ministers, his exposition of that part of the structure of animal organisms entitled the nervous system was exceedingly lucid. As one followed him from point to point, it was very difficult to refrain from exclaiming, in the language of the Psalmist, "I will praise Thee, for I am fearfully and wonderfully made." That no such utterance was evoked from the lecturer, some may say was due to the fact that he was not treating of the origin of the organism, but simply of the action of one of its parts; that he was dealing with physiology and not with psychology, and that it did not come in his way to point out the teleological bearings of his subject.

Such an explanation will hardly suffice; for the expositor, in taking the ground that all the phenomena presented in the movements of animal organisms are fully

accounted for on the hypothesis that they are mere automata, has left no room for any psychological hypothesis. He may tell us, as he did, that his automatic hypothesis leaves the question whether animals have souls, and if so, whether these souls are immortal, an open question; but in doing so he merely repeats, in the case of the soul, the argumentative policy he has pursued in dealing with the momentous question of the being of God. Giving all his energy to the exorcism of mind from the organic and inorganic worlds, he hesitates in presence of the ideal desolation wrought, and oscillates between theism and atheism. To such an extent has this policy hitherto dominated his deliverances, that some have regarded the charge of atheism preferred against him as altogether groundless. The prevalent misconception on this point will be a sufficient apology for a somewhat formal statement of the grounds on which this charge is based.

In his "Evidence as to Man's Place in

Nature" (p. 108), Professor Huxley makes the following statement: "But even leaving Mr. Darwin's view aside, the whole analogy of natural operations furnishes so complete and crushing an argument against the intervention of any but what are termed secondary causes, in the production of all the phenomena of the universe, that in view of the intimate relations between man and the rest of the living world, and between the forces exerted by the latter and all other forces, I can see no excuse for doubting that all are co-ordinated terms of nature's great progression from the formless to the formed, from the inorganic to the organic, from blind force to conscious intellect and will."

On this statement of the case, theism is necessarily excluded. There is no room left for an antecedent Intelligence. The doctrine taught is, that the phenomena of the inorganic and organic worlds have come forth from unintelligent, purposeless, blind force —and that, too, without "the intervention of

any but what are termed secondary causes." Now as these secondary causes have no other background or source, save this same blind force, they cannot be ascribed to any outside intelligent authorship. Professor Huxley, therefore, in recognising secondary causes as factors in this general *mêlée* of causal agency, from whose fertile efficiency nature's great progression in endless, marvellous march, moves on, cannot be regarded as recognising the existence of an ante-mundane intelligence.

Such is his position: is it defensible? Only on one condition—viz., that an effect may transcend its cause. If the ultimate, and, at the outset, the sole cause in existence, be force, and force be blind, then, except on the assumption that the effect may transcend its cause, no offspring of that cause can have eyes. If the fountain-head of the whole phenomena of the whole universe be destitute of intelligence, it is surely most unphilosophical to infer intelligence in the streams. If, as we are told,

and as the constitution of our nature compels us to hold, nothing can come out of nothing, how comes it to pass that Professor Huxley (who, by the way, recognises Philosophy as the mother of the sciences) can educe, by a process of evolution from this same blind, unconscious, unintelligent cause, the marvellous phenomena of "conscious, intellect and will"? If out of nothing, nothing comes, how are we to account for the emergence of consciousness, intellect, and will from the womb of an unconscious, unintelligent thing called force? The only reply possible to him is, that he does not infer these phenomena, but finds them. Well, as it is *the phenomena* he finds, and as *the force* is the thing inferred, how is it that he reasons back from the phenomena of a conscious intellect and will, to a blind, unconscious, unintelligent thing, and pronounces it the author of them all? How is such a process of scientific speculation to be vindicated before the bar of this same con-

scious intelligence? Why, the fact is, that the process can be conducted only "at the modest cost" of the surrender of the very fundamental principle of all science and philosophy upon which Professors Huxley and Tyndall insist—viz., that the cause must account for *all* the phenomena; or, to put it thus, that out of nothing, nothing comes. This principle, atheists imagine, is subversive of the whole doctrine of creation *ex nihilo;* but a moment's reflection ought to satisfy any candid intelligence that it is subversive of the doctrine of the evolution of an intelligent, conscious, personal being from a cause destitute of intelligence, consciousness, or will.

Their fundamental is ours; and all we ask is, that they speculate in conformity with it. When they reconcile with the principle that the cause must account for all the phenomena, the dogma that unintelligent, unconscious force, is a cause sufficient to account for the wondrous phenomena of consciousness, intelligence,

and will, they will have achieved two grand results: (1) They will have subverted the foundation of all reasoning; and (2) They will have made scientific progress, in the future, an impossibility. Till these results shall have been attained, they must excuse those whose minds are governed by laws of thought which compel them to demand for all the phenomena of the universe, including intellect and will, an adequate cause, if they cannot surrender their intellectual birthright, to accept a dogma which rests on the unscientific assumption that the cause need not necessarily account for all the phenomena!

It is worth while to look at the reasons which led Professor Huxley to utter this marvellous verdict. His reason is, the intimacy of the relations of man and the rest of the living world, and that intimacy which obtains between the living world and all other forces. In other words, man is so exquisitely adapted to his surroundings, so much at home amid the

fauna and flora of his dwelling-place,—and these fauna and flora, again, so well adapted to their environments,—that the scientist regards the whole arrangements as furnishing a complete and crushing argument against the intervention of any but secondary causes, and warranting the conclusion that this whole array of orderly, intimate, harmonious relations, has come forth from blind force! This is but another way of saying that the more exquisite the arrangements and adaptations, the less is the evidence of design. Professor Huxley need not any longer regard the Darwinian hypothesis as merely provisional, or speak of it as not proved. The fundamental principle of that hypothesis lies at the basis of the doctrine here expressed. If the phenomena of the universe be the products of a self-evolving force, destitute itself of the faintest kindling of intelligence, and if these phenomena, including man, be so intimately related to one another, and to the blind force whence they spring, then

Darwinism ought to receive from him no merely equivocal advocacy, but the most unqualified support. In this, at least, they are agreed—if we are to judge of Professor Huxley's views from the passage just cited, —that the phenomena of this universe, including earth's fauna and flora, exhibit no trace of an intelligent Cause, and are traceable to a blind, unconscious force! I leave it to an intelligent public to judge whether I was justified in calling upon Professor Huxley to discuss the question, 'Do animal organisms furnish, in their structure and action, evidence of the existence and operation of an antecedent intelligent Cause?' Surely he who ascribes the whole phenomena of the universe, organic and inorganic, to blind force, does, thereby, deny that these phenomena owe their origin to the existence, or operation, of any order or rank of intelligence whatever.

Now it does avail but little here, to point to the fact that Professor Huxley, when

charged with atheism, replied that he could not take this position with honesty, or deny the existence of a God, inasmuch as it is, and always has been, a favourite tenet, that atheism is as absurd, logically speaking, as polytheism.

This defence but serves to confirm the truth of the charge; for the instance adduced in vindication simply illustrates the characteristic of Professor Huxley's writings already referred to. He excludes God from the universe, and refers all its wondrous orders of being to blind force, and then, when called to account, hesitates to espouse atheism because of its alleged absurdity. He does, in fact, just what he did on the platform of the British Association—he oscillates between truth and error. I ask, in view of Professor Huxley's eminence and acknowledged merits as a physiologist, would it not be desirable to have this oscillation brought to an end, and have the needle of his understanding fixed steadily upon that true

pole and life-centre, apart from which the soul of man cannot find rest? It is but fair to give him the benefit of his repudiation of atheism; but it is due to the interest of truth and public morals, that side by side with this we place his repudiation of the doctrine that the universe furnishes evidence of the existence of an intelligent Author. The two statements are utterly irreconcileable; and he whose principles have given birth to such palpable contradictions, ought, at least, to abstain from statements whose only effect upon minds which accept assertions for arguments, must be to infect them with that feverish unrest revealed in the sentences referred to above. We grant to men of science the right to frame working hypotheses, to help them in their scrutiny of nature, but this liberty is not without its law. It is limited by the facts and principles already established. And as, on the one hand, no man is justified in framing, in the exercise of the so-called "scientific

imagination," a hypothesis in conflict with the essential principles of the Newtonian system of the universe, so, on the other, no man is entitled to frame a hypothesis which involves the denial of the evidence of a spirit in man, or of the testimony of the phenomena of the universe to the existence, wisdom, beneficence, justice, and power of God! "*Nullus in microcosmo Spiritus; nullus in macrocosmo Deus.*"

Now it is for these reasons that I feel constrained, in my place and according to my measure, to examine the hypothesis that animal organisms are mere automata. This hypothesis professes to find in the physical organisms of animals, and their environment, a sufficient cause for all their movements, independent of their possessing any inherent power of self-determination. All their actions, it is assumed, can be accounted for by referring them to molecular changes in the sensor and motor nerves, the latter causally connected with the former, while they in

turn owe their origin to the action of their environments. Such is the doctrine; and for it Professor Huxley claims the sanction of Descartes and of modern physiology. In attempting to establish this claim he undertakes to show that a series of propositions, embracing the essential elements of this hypothesis, constitute the foundation and essence of the modern physiology of the nervous system, and are fully expressed and illustrated in the works of Descartes.

The first of these propositions is as follows: "The brain is the organ of sensation, thought, and emotion; that is to say, some change in the matter of this organ is the invariable antecedent of the state of consciousness to which each of these terms is applied."

In justification of his attributing such doctrine to this renowned intuitionist, our learned physiologist cites the following passage from the "Principles of Philosophy." "Although the soul is united to

the whole body, its principal functions are, nevertheless, performed in the brain; it is here that it not only understands and imagines, but also feels; and this is effected by the intermediation of the nerves, which extend in the form of delicate threads from the brain to all parts of the body, to which they are attached in such a manner, that we can hardly touch any part of the body without setting the extremity of some nerve in motion. This motion passes along the nerve to that part of the brain which is the common sensorium, as I have sufficiently explained in my treatise on Dioptrics; and the movements which thus travel along the nerves, as far as that part of the brain with which the soul is closely joined and united, cause it, by reason of their diverse characters, to have different thoughts. And it is these different thoughts of the soul, which arise immediately from the movements that are excited by the nerves in the brain, which we properly term our feelings, or the perceptions of our senses."

To strengthen the evidence furnished in the preceding sentences, Professor Huxley adduces a sentence or two from "Les Passions de l'Ame," which run thus: "The opinion of those who think that the soul receives its passions in the heart, is of no weight, for it is based upon the fact that the passions cause a change to be felt in that organ; and it is easy to see that this change is felt, as if it were in the heart, only by the intermediation of a little nerve which descends from the brain to it; just as pain is felt, as if it were in the foot, by the intermediation of the nerves of the foot; and the stars are perceived, as if they were in the heavens, by the intermediation of their light and of the optic nerves. So that it is no more necessary for the soul to exert its functions immediately in the heart to feel its passions there, than it is necessary that it should be in the heavens to see the stars there."

Having cited these passages, Professor

Huxley proceeds as if he had proved his proposition, and affirms that "this definite allocation of all the phenomena of consciousness to the brain as their organ, was a step the value of which it is difficult for us to appraise, so completely has Descartes' view incorporated itself with every-day thought and common language."

We were often told, during the meeting of the British Association in Belfast, that science is distinguished for its coolness; and certainly, if we are to appraise Professor Huxley's claims upon the basis of this exposition of the Cartesian Philosophy, he must rank among the most eminent scientists. It required no ordinary measure of this scientific grace to face the philosophic and scientific world, both on the platform of the British Association and through the pages of the *Fortnightly Review*, and endeavour deliberately to prove that René Descartes (the author of one of the most notable

of all the *à-priori* arguments for the being of God) was a Sensationist—that he held and taught that consciousness has, as its invariable antecedent, a change in the matter of the brain!

With regard to the passages cited in proof, it may be remarked—

1. That they furnish no ground for the doctrine ascribed to Descartes in Professor Huxley's first proposition. His proposition is universal, embracing and jumbling together the whole phenomena of consciousness, without discrimination and without exception—all thought, all emotion, as well as sensation — whilst the passages adduced have reference simply to thoughts caused by sensation.

2. All that they teach is, that the soul, instead of being diffused throughout the body, resides in the brain, and holds communion with the body and external nature through the intermediation of the nerves. Descartes simply repudiates the notion that it is necessary for the

soul to be, or to exert its functions, immediately in the place where it apprehends the phenomena to exist; as he says, in the very instances specified by Professor Huxley, "It is no more necessary for the soul to exert its functions immediately in the heart, to feel its passions there, than it is necessary that it should be in the heavens to see the stars there."

3. To infer from this statement in regard to the habitat of the soul, and the medium through which it holds communication with the members of the body and the stars of heaven, the sweeping generalization that the soul has no thought or emotion, save those received or excited by antecedent nervous or cerebral thrills, is not only to outrun the *data* relied on in the quotations, but to make Descartes contradict himself.

The proposition which Professor Huxley enunciates as expressing the views of Descartes in regard to the relation of the soul

to the brain, is contrary to the fundamental principles of the Cartesian Philosophy. What Professor Huxley affirms Descartes denies. Instead of holding that the soul is dependent upon the molecular changes which take place in the brain for all its thoughts and emotions, Descartes laid it down as the first principle of his philosophy, that the soul knows itself first, and knows the body in which it dwells, and the external world, subsequently, and because of the primary truths which belong to, and are inseparable from, its very being. It were to insult the intelligence of our age, to enter formally on the proof of Descartes' position as an intuitionist. Let the following suffice. Referring to such thinkers as our modern atomists, Descartes remarks—"Those who have not thought in an orderly manner have had other opinions on this subject, because they have never distinguished carefully enough their soul, or that which thinks, from the body, or that which is extended in length, breadth,

and depth. For while they had no difficulty in believing that they were in the world, and that they had more assurance of it than of any other thing, nevertheless, as they have not taken care that by them, when it was a question of metaphysical certainty, attention ought only to be given to their thought, but on the contrary have preferred to believe that it was their body which they saw with their eyes, which they touched with their hands, and to which they attributed preposterously (*mal à propos*) the faculty of feeling, they have not apprehended clearly the nature of their soul.

"But when the thought which takes cognizance of itself in this way, notwithstanding that it persists still in doubting other things, uses circumspection in trying to extend its knowledge further, it finds in itself primarily ideas of several things; and while it contemplates them simply, and does not assert that there may be anything outside of itself which may be

like these ideas, and also does not deny that there may, it is not in danger of being mistaken. It finds also some common notions, of which it constructs demonstrations which persuade it so absolutely, that it cannot doubt their truth while it applies itself to them. For example, it has in itself ideas of numbers and figures; it has also, among its common notions, 'that if equals be added to equals, the wholes will be equals,' and many others as evident as this, by which it is easy to prove that the three angles of a triangle are equal to two right-angles," etc. ("Les Principes de la Philosophie": Première Partie, §§ 12, 13.)

The foregoing may suffice to prove that René Descartes was not a Sensationist. Holding—as the passages referred to prove he did—that all knowledge has its origin in the soul, that it is the soul which knows and sees and feels, and that its knowledge of other things, including the body, is possible only on the intuitive perception of its own nature and powers and innate

principles, he could not, without an absolute surrender of his whole system, turn round and adopt the sensational, materialistic dogma, that the brain is the organ of the soul in such a sense as that *all* our thoughts and emotions—our innate ideas and primary beliefs, as well as those excited by our sensations—require as their invariable antecedent some change in its matter.

As Professor Tyndall has discussed the point here raised, it may not be uninteresting to hear his verdict. In his "Fragments of Science," pp. 119-21, this able physicist remarks: "Associated with this wonderful mechanism of the animal body we have phenomena no less certain than those of physics, but between which and the mechanism we discern no necessary connexion. A man, for example, can say, *I feel, I think, I love;* but how does *consciousness* infuse itself into the problem? . . . . The passage from the physics of the brain to the corresponding facts of

consciousness is unthinkable. Granted that a definite thought and a definite molecular action in the brain occur simultaneously; we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass, by a process of reasoning, from the one to the other. They appear together, but we do not know why. . . . . The chasm between the two classes of phenomena would still remain intellectually impassable. Let the consciousness of *love*, for example, be associated with a right-handed spiral motion of the molecules of the brain, and the consciousness of *hate* with a left-handed spiral motion. We should then know when we love that the motion is in one direction, and when we hate that the motion is in the other; but the 'WHY?' would remain as unanswerable as before."

Such is Professor Tyndall's account of the two classes of phenomena in question —the phenomena of consciousness, and the phenomena of the molecular changes of

the brain. They occur *simultaneously;* and between the two, he confesses, he can see no necessary connexion. "They appear *together*, but we know not why."

This is a very different doctrine from that advanced in Professor Huxley's first proposition. According to Professor Tyndall, the change in the brain occurs *simultaneously with* the thought or emotion; according to Professor Huxley, it invariably *precedes*. The invariable *antecedence* of the change to the state of consciousness was necessary to the argument; but here, as in many other instances, the molecular chief has broken the links of the physiological chain. The antecedence destroyed, the causal relationship is disproved, and, with it, the hypothesis that the environment determines the molecular change in the sensor nerves, and, through them, the changes in the motor nerves, which determine the movements of the muscles, and, ultimately, of the whole organism. It is hard to see one's offspring strangled in the

very birth; nor does it tend to mitigate paternal anguish, to discover that the hand which perpetrated the deed was the hand of a trusted friend.

The only other proposition meriting formal notice, is that which affirms that "the motion of the matter of a sensory nerve may be transmitted through the brain to motor nerves, and thereby give rise to contraction of the muscles to which these motor nerves are distributed; and this reflection of motion from a sensory into a motor nerve may take place without volition, or even contrary to it."

In support of this proposition, in behalf of which he claims the results of recent research in nerve physiology, Professor Huxley cites, with approval, the following example adduced by Descartes:—"If some one moves his hand rapidly towards our eyes, as if he were going to strike us, although we know that he is a friend, that he does it only in jest, and that he will be careful to do us no harm, nevertheless it

will be hard to keep from winking. And this shows that it is not by the agency of the soul that the eyes shut, since this action is contrary to that volition which is the only, or at least the chief, function of the soul; but it is because the mechanism of our body is so disposed, that the motion of the hand towards our eyes excites another movement in our brain, and this sends the animal spirits into those muscles which cause the eyelids to move."

Now it will be observed that the doctrine of Descartes, as expressed in the proposition and illustrated by the example cited, comes very far short of the doctrine advocated by Professor Huxley. Descartes does not allege, nor could he (without placing himself in direct antagonism with the fundamental principles of his philosophy) allege, that the so-called reflex action is the normal action of the organism. He merely says, that through the mediation of the animal spirits, and without the intervention of the soul, the *requisite* action

of the brain, and of the appropriate muscles, *may* take place in certain cases. This, however, is a very different thing from alleging that reflex, unmediated, unvolitional action, is the rule. Involuntary winking does not prove that men never will to wink! The fact that in some instances there occur actions undetermined by our wills, cannot, without doing violence to our consciousness, be regarded as establishing the universal proposition that we are mere automata, whose actions, one and all, are determined by our environments, independently of understanding, reason, or will. We are conscious that our understanding and reason and will do, each according to its measure and function, deal with the data of sensation, and that the actions which make up the history of our daily activity are determined by their arbitrament.

A complete analysis of the phenomena presented in the instance adduced, will disprove the alleged automatism of this par-

ticular action of winking. We have phenomena belonging to each of the three great classes into which metaphysicians divide the operations of the human mind. 1. There is an act of cognition, by which the mind apprehends what, under ordinary circumstances, and without the guarantee of friendship, must be regarded as placing the eye in peril. 2. There is, consequent upon this apprehension, a feeling of pain, which cannot be said to be purely physical, inasmuch as no injury has as yet been inflicted, but must be purely mental, arising from the anticipation of suffering apparently imminent. 3. There is a cognate act of conation, or effort to shield the imperilled organ from the impending danger. This act of conation, it is worthy of note, extends not simply to the closing of the eyelids, but to the raising of the hands into a position of defence, and to the sudden retraction of the head to avoid the stroke. In a word, we have, in the example relied on by Professor Huxley, not only

mental action, but mental action in every category of nomological psychology. We have cognition, feeling, conation. There is the apprehension of danger, the *mental* emotion consequent thereon, and there is the *intelligent* use of such means of defence as are within the immediate reach and power of the agent. He who will, may regard all these acts and passions as automatic, but he can do so only by a superficial analysis which fails to detect, and estimate, the determining elements of the case.

In confirmation of this analysis and estimate of the instance of automatic action advanced by the expositor of Descartes, it is simply necessary to substitute one's own hand for that of the friend. Of course all the purely physical phenomena incident to the pretended blow, in the one case, are brought into existence the moment one moves his hand as if he would strike his eye. Nevertheless there is no movement of the eyelids, no attempt to raise the other hand for defence, or to retract the

head to avert or avoid the blow. How, or why, is this? The reason is as obvious as it is fatal to automatism. It is simply this —the guarantee in the latter case is perfect and absolute, whilst, in the former, it was imperfect and unreliable. No one can be sure that his friend, however friendly and well-intentioned, may not, through inaccuracy of aim, under-estimate of force, or from some other cause, err in the direction or extent of the movement of his hand, and thus inflict, however unintentionally, a serious injury upon one of the most important of all the members of this marvellous organism.

Thus, without raising any question in regard to occult volitions, and dealing simply with the palpable facts of the instance submitted by Professor Huxley himself, it is manifest that they furnish no ground for the conclusion that motions indicative of purpose can be accounted for by mere unmediated molecular change.

But whilst the example adduced gives

no countenance to the automatic hypothesis, it is unquestionably fatal to a cognate hypothesis advocated by Professor Huxley—the hypothesis which refers the whole phenomena of the organic and inorganic world to blind, unconscious, unintelligent force. It is eminently teleological. Assuming for the present that the action of winking is the offspring of a reflex action unconnected with the will of the organism, directly or indirectly, consciously or unconsciously, will "the questioning impulse" permit us to rest satisfied with the reference of it to "the animal spirits" of Descartes, or the "molecular change" of Professor Huxley? Descartes himself held very different doctrine, and in the passage quoted, seems to intimate a very different solution of the alleged involuntary action—ascribing it to the *disposition* of the *mechanism* of our body. If mechanism implies a mechanic, if disposition, revealing intelligent purpose, implies a disposer, the language of Descartes, fairly

interpreted, may be regarded as carrying with it the implication, that an action so admirably adapted to the preservation of the organ of vision, evinces the existence of an author of the organism, possessing the marvellous constructive resource necessary to the production of so exquisite a piece of mechanism. But though Descartes and Huxley, backed by the authority of the whole materialistic school, should agree in referring such an action to a mere purposeless wavelet in the matter of the nerves and brain, the human mind must reject the reference. As the action is brought about by a set of specific mechanical arrangements, transcending anything ever invented by man, it is impossible for any one, not under the spell and fascination of a pet hypothesis, to believe that it is accounted for by any such reference. Such reference can be made only "at the modest cost" of sacrificing a primary belief fundamental to philosophy and science—the belief that every effect must have an ade-

quate cause. The phenomenon in question, evincing, as it does, an admirable adaptation of means to an end, exhibits marks of design, and therefore demands as its cause an adequate Intelligence—an Intelligence so careful of the organism, and so prescient, that He devises a defensive apparatus, so nicely adjusted and fitted for the ends aimed at, that it acts with a promptness equal to almost any emergency, and is so bent on the performance of its function of defence, as almost to refuse obedience to the will, where there is even the faintest possibility of peril to the priceless treasure it has been set to guard. In whatever tower "the death-knell of teleology" is to be tolled, it will be a long time before it is sounded forth from the watch-tower within which Professor Huxley has sought a lodgment for his materialistic automatism. No one who will duly ponder the phenomena presented in the structure and functions of the organ of vision, with, as Mr. Darwin

expresses it, "all its inimitable contrivances for adjusting the focus to different distances, for admitting different degrees of light, and for the correction of spherical and chromatic aberration," will wonder that even the author of the Natural Selection hypothesis was staggered by them; or that he was compelled to confess that such a solution of such phenomena "seems absurd in the highest degree." ("Origin of Species," p. 143.) Nor will Mr. Darwin's attempt to vindicate such a solution reduce the hypothesis one thousandth part of a second below the highest gradient on the scale of absurdity, in the estimation of any mind not already possessed by evolutionary prejudices.

It were a weary business to examine the remaining propositions of this marvellous lecture, and profitless as weary, inasmuch as the discussion in the line thus marked out must leave untouched the principal facts to be accounted for. These facts are presented in the following pas-

sage, quoted from Descartes by Professor Huxley; and to these the controversy must be limited.

"It appears to me," says Descartes, "to be a very remarkable circumstance that no movement can take place, either in the bodies of beasts or even in our own, if these bodies have not in themselves all the organs and instruments by means of which the very same movements would be accomplished in a machine; so that even in us the spirit or the soul does not directly move the limb, but only determines the course of that very subtle liquid which is called the animal spirits—which, running continually from the heart, by the brain, into the muscles, is the cause of all the movements of our limbs, and often may cause many different motions, one as easily as the other. And it does not even always exert this determination; for among the movements which take place in us, there are many which do not depend upon the mind at all—such as the beating of the

heart, the digestion of food, the nutrition, the respiration of those who sleep; and even in those who are awake, walking, singing, and other similar actions, when they are performed without the mind thinking about them. And when one who falls from a height throws his hands forward to save his head, it is in virtue of no ratiocination that he performs this action; it does not depend upon his mind, but takes place merely because his senses, being affected by the present danger, cause some change in his brain, which determines the animal spirits to pass thence into the nerves in such a manner as is required to produce this motion, in the same way as in a machine, and without the mind being able to hinder it."

Of this passage Professor Huxley expresses his unqualified approbation. He says: "I know in no modern treatise of a more clear and precise statement than this, or a more perfect illustration than this, of what we understand by the automatic

action of the brain,"—and Huxley's brain embraces the human brain. Summing up this sketch of these phenomena as given by Descartes, the Professor proceeds: "What he tells us in substance is this—that when a sensation takes place, the animal spirits travel up the sensory nerve, pass to the appropriate part of the brain, and there, as it were, find their way through the pores of the substance of the brain; and he says that when this has once taken place—when the particles of the brain have themselves been, as it were, shoved aside a little by the single passage of the animal spirits—that the passage is made easier in the same direction for any subsequent flow of animal spirits; and that the repetition of this action makes it easier still, until at length it becomes very easy for the animal spirits to move those particular particles of the brain, the motion of which gives rise to the appropriate sensation—until at length the passage is so very easy that almost any-

thing, especially an associated flow, which may be set a-going, allows the animal spirits to flow into these already open pores more easily than they would flow in any other direction; and in this way a flow of the animal spirits recalls the image—the impression made by a former sensory act. That, again, is essentially, in substance, at one," Professor Huxley tells us, "with all our present physical theories of memory. That memory is a physical process," he alleges, "stands beyond question."

Such is the theory of Descartes endorsed in the Ulster Hall by Professor Huxley, and applauded by a portion of the audience. Substituting "molecular change" for "animal spirits," and leaving out the soul, he accepts the theory unmodified. Let us look into it in detail.

1. In the first place, there are several points in the theory to which we do not only not object, but upon which we insist, and insist as teleologists, to the confusion of atheists. We hold, with Descartes,

that the organs and instruments by which our bodily movements are effected, are substantially the same as those by which like movements would be accomplished in a machine. We believe, as fully as Descartes, or Huxley, in the exquisite mechanism of the human body, and would, if lecturing on the teleology of that mechanism, prefer the learned Professor to all other demonstrators. Let us hope that we may have the advantage of a public exposition of this wondrous machinery, by one who is *facile princeps* in this department. I shall be glad to sit at his feet as he points out the hinge-joints, the ball-and-socket joints, and the pivot-joint, and the other marvellous mechanical arrangements of the human skeleton. And I am sure it will delight us all to see him lay on the sinews and the flesh, and cover them with that wondrous envelope, the skin—pointing out how the muscles are fastened on to the bones at the proper points for exerting the requisite mechanical

power. And the time would not hang heavily on our hands, while the accomplished physiologist would picture to us the arterial and venous systems, in their wondrous correlations; or while, beginning with the teeth and the saliva, he would trace the process by which food is prepared for, and conveyed to, the stomach, and expound the whole apparatus of digestion by which it is transmuted into chyme, and chyle, and blood, and the marvellous machinery of the heart, with its exquisite system of valves by which the life-giving, life-sustaining stream, freighted with the appropriate nourishment, is urged forward for the growth, or sustenance, of the bones, and muscles, and nerves, and brain.

To all this demonstration we would listen with rapture, and also with awe; and the words of the Psalmist alone would express our instinctive conviction, that we are fearfully and wonderfully made! But oh! how would our admiration of the demonstrator be abated, if, at the close,

he should turn upon us, and lay upon the impressible emotions of our hearts towards the Author of such marvellous mechanism —mechanism without a parallel in the whole compass of human invention or contrivance—the deadly chill of the atheistic verdict, that this exquisite organism was not made at all by the hand of any intelligence, but that it came forth by a process of evolution, without the intervention of any but secondary causes, from the womb of blind force!

2. Still further: we see no reason for dissenting from the second element of this Cartesian theory—viz., that the soul does not *directly* move the limb, but moves it *mediately*, through the instrumentality of what he calls "the animal spirits," or what scientists now call "molecular change." We believe, with Descartes and with Huxley, that the immediate cause of the muscular movement is the mystic change which takes place in the molecules of the nerves of motion. Thus far we are agreed.

But having reached this point, we are brought face to face with two mysteries of which Mr. Huxley attempts no account at all. The one is the molecular change in the nerves of motion; the other is the connexion between that change and the appropriate movement of the muscles, both as to degree and direction. How is it that the proper change takes place in the molecules of the proper nerves, and that this is followed by the proper contraction or extension of the proper muscles? Descartes accounts for the change in the molecules of the nerves by referring it to the soul; Huxley leaves out this part of his master's theory, and assigns the change no cause whatever; whilst both the master and the disciple are content to say nothing as to the *nexus* which links the change in the nerves to the appropriate muscular movement. In the hands of the master the theory is simply defective; in the hands of the disciple it is throughout at war with the scientific fundamental, that

every effect must have a cause. Descartes, in tracing to the soul the molecular change in the nerves of motion by which the proper muscles are stimulated and guided in their action so as to move the proper limb in the proper direction, to the proper extent, and with the requisite velocity, satisfies, to some extent, that "questioning impulse" of our minds which demands for all phenomena an adequate cause. But Professor Huxley, ignoring the existence of any such impulse, would have us rest in the nervous thrill of molecular change—which, although invariably followed, except in abnormal physical estates, by movements indicative of intelligent purpose, is the offspring of nothing save blind force! And this is the philosopher who complains that theologians will not allow him "to think out his subject scientifically — to go as far as reason leads"! Does reason lead up to, and rest in, molecular change? Can any process of thought, ruled by the principle of causality, rest in a molecular wave-

let as the ultimate cause of intelligent action?

Now I think we have in the Atlantic cables, and their arrangements at the Irish and American ends, a very appropriate illustration of the utter inadequacy of Professor Huxley's account of the movements of the human organism. What would any person, of competent knowledge, think of an electrician, who, in accounting for the perpetually varying movements of the needles at Heart's Content, Newfoundland, would simply say that they were caused by molecular changes in the submarine cables? Would it not be reasonable to ask such an expositor the following questions?—

1. How is it that there are *such* cables in existence?

2. What originates the molecular changes in their wires?

3. What regulates the flow of the electric current, or the tremor of the molecules, so that the needles are moved in the proper

directions, and so as to produce intelligible signs?

4. Who contrived the mirror for registering the faintest thrill?

These questions must arise in the mind of any person endowed with "the questioning impulse," who enters upon the investigation of these phenomena: and no answer will satisfy the inquirer which does not recognize in the structure of the cables the hand of an intelligent, purposing, fabricator, and place at the ends an intelligent operator. He who stops with the electric thrills of the wires, does not answer a single question of the four just specified—questions, be it observed, which the constitution of our nature compels us to ask. And, in the case before us, he who informs us that all our muscular movements are due to tremors in the nerves of motion, connected in some undefined way with like tremors in the sensor nerves, does not answer a single question of the corresponding four, to which our nature demands an

answer at the hands of the physiologist. We demand from him, on a warrant issued by that philosophy which Professor Huxley proclaims the mother of the sciences, that he answer the following questions :—

1. How is it that there are *such* nerve-wires in existence ?

2. What originates the molecular changes by which they are thrilled ?

3. What regulates the waves by which they are agitated, so that the muscles are moved in the proper measure and direction ?

4. Who contrived the apparatus by which the nerves move the muscles ?

How is it that Professor Huxley in his elaborate lecture evaded every one of these questions ? Surely the phenomena warrant us in raising them; and surely the scientist who dare not face them must have a theory that cannot bear a thorough investigation. Descartes, by placing the soul at the fountain-head of the movement, and giving to it, through "those very subtle parts of

the blood" which he calls the "animal spirits," command of the nerves, and through the nerves control of the muscles, and through the muscles control and mastery of the members of the body, answers at least two of the questions, whilst his learned eulogist, claiming the support of the most recent physiological discoveries, refuses to answer any of the four, and refers the whole phenomena to molecular change, and then complains, that he is "deafened by the tattoo of the drum ecclesiastic" for going as far as reason leads!

Now I put it to the intelligence of all men, whether a physiologist who simply ascribes all these phenomena to the molecular changes which take place in the nerves, has finished his task as a physiologist? Were the molecular changes a steady, ceaseless, undiscriminating current, producing aimless, unintelligible motions in the muscles, and thereby agitating the members of the body as the winds of heaven vex the waters of the sea, or agitate

the trees of the forest, there might be some apology for such abrupt repression of the philosophical instinct; but as the series of molecular changes is so regulated as to produce in the muscles the requisite contractions, or relaxations, for the effecting of specific movements of the members of the body—such movements as necessarily indicate an antecedent purpose—the man who does not refer the result, and the closely-linked machinery by which it is brought about, to an antecedent purposer, is as unscientific as he is morally inexcusable.

3. But the ὕστερον πρότερον of this Huxleian physiological psychology is yet to be stated. Bringing up the Cartesian theory abreast of the advanced thinking of his own school, he gives us an account of the transit of the first molecular thrill, or tremor, from the point of origination at the extremity of the sensory nerve to its appropriate destination in the brain. Having reached the proper point in the brain, the atomic, or molecular wave, or

whatever it may be called, finds its way through the pores of that mysterious substance, "shoving, as it were, aside" the particles which may stand to thwart its progress. This is the pioneer molecular thrill, and by its transit, tunnelling, as it does, its way through the citadel of thought, the passage is made easier in the same direction, for any subsequent current of molecular change.

Now the chief difficulty suggested on reading this account of the telegraphy of the nervous system of the human organism, is to reconcile it with the manifest intelligence of its author. We can see at once how, on Professor Huxley's hypothesis, the transit of the first flow of molecular change should prepare the way for a second, and this again for a third, in the same direction; but the mystery of mysteries remains unsolved, and must, on this theory, for ever remain unsolved—viz., *How did the first current happen to flow to the proper point, and deliver its message "to those particular*

particles of the brain, the motion of which gives rise to the appropriate sensation?" Professor Huxley is very profuse in his instructions on the former point, but is absolutely silent on the latter. He tells us how the first voyage prepares the way for the second, and how this again makes easy the transit of the third ; but he has not one word to say about the only point requiring explanation at the hands of a physiologist, and, especially, at the hands of a physiologist who denies the intervention of intelligence in this wondrous process. The question of questions here is, of course, *How is it that the first nervous thrill found its way to the proper point in the brain, and put itself into communication with the very particles requisite to originate the appropriate organic action?* Let Professor Huxley account for the transmission of the first telegram to the proper cerebral functionaries, in harmony with the theory that the nervous system is not the offspring of an antecedent intelligence, and he will have laid atheism

under a debt of the profoundest gratitude. Till he shall have solved this first problem, we must be excused for holding that his attempt to account for the actions of animal organisms, on the bald hypothesis of molecular change, has proved a failure. If there be no mind to receive the telegram and issue the order, must not the cerebral particles which perform these indispensable functions be themselves intelligent?

4. Nor does there seem to be any theological reason for calling in question the automatism of those functions which Descartes has positively pronounced automatic —such as the beating of the heart, digestion, nutrition, respiration in sleep—provided the term be not employed in a sense exclusive of intelligence as connected in any way with these wondrous movements. These, we hold with Descartes and Professor Huxley, go on, so far as we are aware, independent of any exercise of *our* will. The efficient cause of these movements comes not into the sphere of human con-

sciousness, and must be sought outside the sphere of human volition. In this sense of the term (viz., that these motions are not dependent upon *our* will) they may be called automatic, but in no other—most certainly not in Professor Huxley's, which makes them dependent upon the will of no one. It is utterly impossible for the human mind to regard these marvellously complex movements as accounted for, when they are ascribed to mere molecular change. Here the mind of man cannot rest. Carrying as they do upon their forefront, the impress of design, they are teleological, and proclaim the doctrine enunciated by Paul to the philosophers of Greece, that in Him we live and move and have our being. No other conclusion will satisfy that principle of the human mind which demands for all the phenomena under investigation an adequate cause. Professor Huxley rests, or tries to rest, in molecular change, as a sufficient cause of all the phenomena of these so-called automatic functions of the

human organism—functions furnishing the most manifest evidence of the presence and presidency of mind; while we, with the apostle, recognise the evidence, and infer their dependence upon the exercise of the wisdom and power of Him by whom all things consist, in whose hand our breath is, and whose are all our ways.

In taking this ground, I am not to be understood as endorsing the antiquated doctrine of occasional causes recently advocated by Mr. Alfred Wallace, or as teaching that second causes are destitute of any causal efficiency; or that they do but furnish the occasion on which the first Cause acts. The position taken is simply this: that the organs to which automatic action is ascribed, give unquestionable evidence, in their structure, of the existence and operation of an antecedent intelligent Cause, and that their continuous, incessant activity, implies the presence and efficiency of that same Cause, maintaining them in the possession of their properties, and sustaining

them in the execution of those mysterious functions for which they were designed. He who fashioned the original germ, and endowed it with life, watches over all its movements, fostering its vital powers, preserving and governing its so-called automatic functions. No objection to this account of the automatic action of animal organisms can be urged, which does not, ultimately, involve the denial of an extra-mundane, omnipresent, omniscient Intelligence.

5. But Professor Huxley goes still further, and while he proceeds with a degree of hesitancy, he nevertheless seems inclined to claim scientific authority and sanction for the very conjectures of Descartes. Descartes had ventured the conjecture that, as actions of a certain amount of complexity are brought about mechanically and without the intervention of consciousness, it may be that the whole of man's physical actions are mechanical—his mind living apart, like one of the gods of Epicurus,

but, unlike them, occasionally interfering by means of his volition. Mixing up this conjecture with a Cartesian speculation in regard to the psychology of brutes, which concludes them to be both soulless and senseless, acting as if they saw and felt and heard, whilst destitute of sight or feeling or hearing, he reaches the conclusion that whilst science cannot absolutely determine either for or against this marvellous hypothesis, it has nevertheless received as much and as strong support from modern physiological research, as any other of Descartes' notions! Theologians are sometimes accredited with saying hard things about science, but it is questionable whether any theologian ever uttered anything against science to be compared with this. The sum and substance of this disquisition on brutes, is simply this—that science cannot say whether they see, or feel, or hear! The natural clemency of Professor Huxley's nature, but not his science, leads him to the conclusion that it

is much better not to concur with Descartes on this point, and to treat the lower animals as if they were susceptible of pain —as weaker brethren, who are bound, like the rest of us, to suffer for the general good.

Well, we are, of course, to regard this as the outcome of modern scientific research. Surely it was not for nothing that Belfast put on its gayest attire and assembled in the Ulster Hall, seeing that we now have it, on the authority of an eminent physiologist, that, on the whole, it is better to gainsay science in our treatment of our dogs: for example, to assume that they see us when they look at us, that they hear us when they answer to their names, or that they feel pain when we inflict chastisement! There is, of course, no place for argument here. The only alternative left, is that which the learned Professor has been compelled to adopt —viz., to trust the testimony of the senses, and reject scientific speculations when they come in conflict with it. Having brought

the speculation into such manifest collision with unquestionable facts, that he dare not act it out in his treatment of the actual animal organisms with which he is ever coming in contact, he has done what any sensible man would do in the circumstances,—he has rejected the speculation, even though strongly countenanced by recent physiological research, and, however reluctantly, has concluded in accordance with the testimony of his senses. As he felt constrained to abandon this crotchet, it is to be regretted that he should have devoted all but one-half of the lecture to the discussion of it.

Nor is his abandonment of this Cartesian conjecture to be wondered at, when the *data* adduced in support of it from modern physiological research are considered. These were, the automatic actions of the human organism, already disposed of; those of a frog deprived of certain portions of the brain, and those of a wounded French soldier.

With regard to the case of the frog—a case which figures in the hand-books, entitled "Goltz's balancing experiment," Goltz placing a rough board, about eight or nine inches square, where Professor Huxley, moved, perhaps, by the sympathies of kinship, placed his hand—with regard to this case, I have simply to say that the inferences drawn in regard to the automatic character of the movements were not proved. Dr. Tyndall, in his "Fragments of Science" (p. 133), lays down the principle—a principle which, on one occasion, he applied to the actions of the President of the British Association—that when our fellow-creatures behave *as if* they were reasonable, we are warranted in the conviction that they are reasonable. This principle is as applicable to frogs as to men; and when we see a frog acting *as if* it were cognizant of danger—balancing itself on Goltz's board or Huxley's hand; or, not on one occasion, but as often as the experiment is repeated, jumping so as to

evade an obstacle placed before it, we are compelled, whatever the mere anatomist may say to the contrary, to regard it as not deprived of all the organs of sense, and as still capable, however marred and maltreated by the knife of the physiologist, of taking note of external things, and of adapting its actions to its environment—of behaving, in fact, as a frog in the circumstances ought to behave. The principle on which this marvellous attempt at physiological, as distinguished from a logical, *modus tollens,* was conducted, is utterly fallacious. It is utterly fallacious to infer from a partially disorganized organic structure, what elements are concerned in the movements of the perfect animal. The illustrations given, instead of tending to establish the hypothesis in question, must, if duly considered, prove subversive of it. If organisms, even when deprived of the cerebrum, as in the frog experiments, give unquestionable proof that they still possess the powers of apprehension, and self-

adjustment consequent upon the apprehension, and clearly conformable to the exigencies of their position, surely such experiments warrant us in taking the ground of a triumphant *à fortiori* argument, in reference to unmarred and unimpaired organisms, with full cerebral power. These remarks apply as well to the case of the wounded French soldier, cited by Professor Huxley, as to the case of the frog, or any other case which can be adduced. The principle is invalid, and suicidal.

And now, before passing from this point, we would ask Professor Huxley, who has evinced such discretion in abandoning a conjecture, even at the sacrifice of half the labour incident to the preparation of his address, to exercise like caution in regard to the other branch of his theme. If he dare not venture to carry out a Cartesian crotchet in his treatment of dogs, surely he will not venture to put his automatic hypothesis into practice in his treatment of

men. If he dare not, in his dealings with dogs, assume that they are destitute of feeling, surely he will hesitate before he risks the tremendous consequences of treating men as if they had no souls!

6. It is scarcely necessary to say, that I do not agree with Professor Huxley in regard to the relation of our ideas to external things, affirmed in his lecture. According to the doctrine advanced, we have really no knowledge of the external world. In fact, the only thing we know, is that we know nothing. If, as we are told, there is no warrant for believing that external objects are like what we take them to be, it is obvious that we live amid delusive phantoms, and are the sport of our own unreal imaginings. If this be the result of the interposition of the nervous system between the external cause of sensation and the phenomena of consciousness, our interpretations of these phenomena must be as delusive as the phantoms with which they deal.

When a philosopher takes this ground, he has not only no reason to complain, but ought to be thankful, if he be awakened from his unreasoning reverie by the tattoo of the drum ecclesiastic. The belief that external objects are as they appear—are what we take them to be—is an element of that estate of consciousness incident to the apprehension of them. This conviction cannot be shaken, except by shaking our confidence in the trustworthiness of our nature. But if the constitution of our own being is not to be trusted, on what are those, who would subvert our faith in it, to base their arguments? Are not the faculties employed by them in the argument a part of the very constitution which they would persuade us not to trust? That is, they must trust nature in order to prove her unworthy of trust! Professor Huxley has not yet adopted the formula of the Chian sceptic, Metrodorus, "*I do not even know that I know nothing*," but he has manifestly adopted the pre-

mises from which that nescient formula logically flows. Indeed, the premises lead to absolute nescience; for it is difficult to see how either Huxley or Metrodorus could be sure even of his own ignorance.

Before the avowal of his faith in this doctrine he should have consulted his friend Dr. Tyndall, who, following Herbert Spencer, lays it down as a crucial test of a truth, that it be capable of presentation to the mind under the form of an image. If all we know of external things is, that they bear no likeness to this image, surely it must follow that the image can be no test of the truth or falsehood of our cognitions, or of our judgments in regard to the phenomena, or of the nature of the things in themselves. If so, what becomes of Dr. Tyndall's system of molecular physics, whose fundamental principle is, that the cause which we conjure up by the mystic wand of the scientific imagination be exactly like the mental image? How the two chiefs,

starting, each with the same stock of atoms and molecules, should reach such antagonistic philosophic poles, it is difficult to conjecture. But we have had, during the proceedings of the British Association, the open avowal of materialism from the one, and the open avowal of idealism from the other! It was well and providential that these champions of Atomism should thus publicly contradict each other. There is a God above both the atoms and the atomists, who bringeth the counsel of the wise to nought. Let it not be forgotten, that the two scientists who refer all phenomena to atoms have refuted each other on the platform of the Ulster Hall—the one proclaiming himself a materialist, the other an idealist—the one affirming that nothing is true which cannot be imaged, the other affirming that all images of the external world are unreal and fallacious, and bear no resemblance to the things themselves, if things external there be. Surely one may say of such speculators as Paul said

of the heathen philosophers of old : "They became vain in their imaginations, and their foolish heart was darkened. Professing themselves wise, they became fools." We were told that these men would revolutionize thought in the metropolis of Ulster, and yet God so ordered it that the one denied what the other affirmed. "Verily, He maketh the wrath of man to praise Him, and the remainder of wrath He doth restrain."

In concluding my strictures on the scientific phase of this lecture, I am constrained to add, that my estimate of the line of argument by which Professor Huxley has sought to conduct his audience to the conclusion that animals are mere automata, is not very high. Viewed from the physiological standpoint it was most unscientific. He utterly ignored the existence of a law revealed in the phenomena of which he was treating, the mere statement of which is sufficient to put to confusion any automatic speculator.

The law in question is, that as we ascend the scale of animal life, from the frog, new parts of the brain and new powers of intelligence and independent action appear; till, after a great many intermediate steps, we come to man, with large cerebellum and enormously large cerebrum, still having much of his system governed in part by automatic action, but having, besides, a powerful controlling intelligence and will. If there is much in the phenomena of Goltz's experiment, irreconcilable with the assumption that even the frog is a mere automaton—so much, indeed, as to make Professor Huxley hesitate to pronounce its action automatic—surely the argument against the conclusion of man's automatism rests upon an absolutely irrefragable physiological basis. If, as the facts show, the higher the organism stands in the scale of life, the less potent and controlling are the automatic powers, and the more potent and dominant the voluntary, what scientific basis is

there for Professor Huxley's dogma that *all* animals are mere automata, perhaps possessing consciousness ?

It only remains that notice be taken of a remarkable claim set up by Professor Huxley, at the close of his address. Having inculcated the doctrine that brutes are mere machines, with a reserve as to the probability of their possessing conciousness, and having confessed "that the view he had taken of the relations between the physical and mental faculties of brutes, applies and is intended to apply, in its fulness and entirety to man," he claims for this doctrine the authority of Augustine, John Calvin, and Jonathan Edwards ! That is, he claims that these theologians taught that men are mere (probably) conscious machines ! This he does on the platform of the Ulster Hall, and is applauded by a part of the audience, who, of course, assumed that so great a physiologist must also be a deeply-read theologian. That response must have confirmed the lecturer

in the conjecture that Edwards was not much read in Ulster, and have assured him that he was comparatively safe, before such an audience, in claiming doctrinal kinship with the great New England divine. Had the tribunal before which the claim was advanced been competent, it had met with a very different reception; for no one acquainted with the views of Edwards could have any other feeling than that of moral indignation evoked by the attempt to identify him with such degrading, demoralizing dogmas. You will not think this language too strong, when told that the doctrine ascribed by Professor Huxley to President Edwards is expressly repudiated and formally refuted by that prince among theologians in his treatise on the Will.

Replying to those who, like our physiologist, attribute such consequences to the doctrine of the Will advocated by him in that immortal treatise, he says, "that man is entirely, perfectly, and unspeakably

different from a mere machine, in that he has reason and understanding, with a faculty of Will, and so is capable of volition and choice; in that his Will is guided by the dictates or views of his understanding; and in that his external actions and behaviour, and in many respects also his thoughts and the exercises of his mind, are subject to his Will; so that he has liberty to act according to his choice, and do what he pleases; and by means of these things is capable of moral habits and moral acts—such inclinations and actions as, according to the common sense of mankind, are worthy of praise, esteem, love, and reward; or, on the contrary, of dis-esteem, detestation, indignation, and punishment." ("Edwards on the Will," pt. iv. § 5.)

In view of this express repudiation of the doctrine that men are mere machines, and the counter-demonstration of their free, unfettered, moral agency, Professor Huxley may be fairly asked, how he could ascribe such doctrine to the great

metaphysician and theologian? This question he must answer, or stand before the scientific and theological world in the unenviable position of one who has been silenced by the authorities he has invoked. Further comment on this attempt to identify Edwards with the mechanical, materialistic school of Hobbes and Hartley, Priestly and Belsham, is unnecessary. "*Ex uno disce omnes*": from his treatment of Edwards, judge of his capacity to interpret Augustine and Calvin.

And now, in conclusion, let me state my estimate of the moral tendencies of the doctrine of animal automatism as applied to man. Let it be adopted, and human society becomes an impossibility. If men are simply conscious automata, whose actions are traceable to nothing beyond the molecular changes of their physical organism, all responsibility must be at an end. On this theory of human actions, there is not only no ground for future rewards or punishments, but there is no

ground for the pains and penalties prescribed by human legislation for the protection of society. If virtuous actions differ from vicious actions only as one molecular thrill differs from another, or as a positive electric current differs from a negative one, there is manifestly no more foundation for a system of human ethics than there is for a system of magnetic jurisprudence. If the ultimate analysis of human actions lands us in mere molecular change, it must follow that men are no more responsible for the thrills and tremors of which they are the subjects, than are the Atlantic cables for the messages they transmit. Such doctrine would not only erase from the future the judgment-seat, and the eternity of bliss or woe beyond; but it would abolish all earthly tribunals, and make our earth the theatre of the very hell it would obliterate.

From such vain philosophy let us turn away as we would from the pestilence. Its feet take hold on death, and there is no peace for its votaries. It would fondly

link itself to great names; but the men of theological and philosophical renown, whom it claims, would have spurned it as they would the companionship of a scorpion. Young men of Great Britain and Ireland!—will you identify yourselves with a science falsely so-called, which would identify you with brutes, and, repressing the noblest aspirations of your nature, would turn our world into a Sodom, and lay upon your brightest hopes the blight of an eternal night?

On Superstition in Christendom.

BY THE

REV. DONALD FRASER.

III.

ON SUPERSTITION IN CHRISTENDOM.

WHEN there is rough weather on the German Ocean, it goes hard with deck-loaded ships. In like manner, under the keen and searching winds of modern discussion, it will go hard with Christianity itself, if it be deck-loaded with superstitious incumbrances and old wives' fables. It is vain to deprecate the winds and deplore the waves. The ship would ride safely enough, if only that heavy deck-load were thrown overboard.

No doubt, to be too light in the water may be as dangerous as to be too deep. To minimise the faith is to cast away

valuable cargo: to exaggerate it is to bury the cargo under the surplus load of credulous additions. It is a question whether the former or the latter be the more mischievous. Probably to the moral life of the individual man scepticism is the more hurtful, as drying up the very juices of his spirit. It is a saying of Richter, "I would rather dwell in the dim fog of superstition, than in air rarefied to nothing by the air-pump of unbelief, in which the panting breast expires, vainly and convulsively gasping for breath." But for the cause of God and of truth at large, it is quite possible that superstition may be more hurtful than incredulity. It appears to be a devoted friend, and as such is allowed to erect its strongholds within the Christian lines. Yet from these strongholds it plays into the enemy's hands; and the dangers in the rear are more galling and perplexing than any flying shot of infidelity in front. The defences are seriously weakened, and the very citadel

of truth is exposed to argumentative disadvantage and intellectual contempt. What Mr. Gladstone has lately said of Vaticanism applies to all the superstition in Christendom—at least in its more serious forms: viz., that "in its ultimate operation on the human mind, it is dangerous to the foundations of that Christian belief which it loads with false excrescences, and strains even to the bursting."

But what is meant by superstition? A very exact definition of the term is not possible, because this is one of those words which cannot be sufficiently interpreted by etymology alone, but must be explained by some reference to usage. No doubt its root is *supersto*, 'I stand over'; and the stress of meaning lies on the *super*, 'over, above': yet it is not clear whether the idea conveyed by the derivation of the word superstition is, 'I stand over, being awe-stricken by the deep mystery on which I gaze'—or, 'I am occupied with objects that stand over me,

and over-awe or overwhelm me.' The latter seems to have been the conception of Lucretius: "Inanis et superfluus timor rerum superstantium." Cicero uses the term in the sense of excessive devotion and ignorant fear; and such is ordinarily its meaning among English writers. The Bampton Lecturer for 1852 has put it well enough: "Religious faith is fundamentally a reasonable belief of revealed truth. Infidelity is an unreasonable disbelief of this truth, and rejection of its evidence. Superstition is an unreasonable belief of that which is mistaken for truth."

Let us put this last definition to the test. It will not allow us to describe as a superstition, the belief which once overspread all Christendom that the sun goes round the earth—because, though that was an error mistaken for truth, the belief of it was not unreasonable in what was then the condition both of the science of astronomy and of the science of biblical interpretation. But it does allow and

require us to characterize as superstitious the belief that a saint crossed the channel on his cloak; because not only is the thing not true, but the belief of that which is mistaken for truth is, and always was, unreasonable, being without evidence, and against common sense. So also is it a superstition to hold that a small wafer or morsel of bread, and every crumb that composes it, though pronounced by all our senses to be baked bread and nothing else, is transmuted into the very body, blood, soul, and divinity of Jesus Christ,—not only because this is an untruth, but because the belief of the untruth is, and always was, egregiously unreasonable, being without evidence, and against evidence, and involving contradiction and absurdity.

There are those, however, who regard all belief of what is called 'revealed truth' as unreasonable. They point out to us that all ancient nations have their religious traditions and sacred books made up of mythologies, the exploits of heroes, and

of poetic impersonations of nature and fortune, with some elements of moral worth, and perhaps some of priestly imposture. The Christian religion is founded on the old Jewish literature, now collected, translated, and circulated in what we call the Bible; but these objectors refuse to admit that the Bible has any more authority, as a revelation of truth, than any collection of the old fables, songs, proverbs, and prophecies of India, Persia, or Greece. It may be the best collection, but it is only one of a class, and to consult it as an oracle is a weakness unworthy of full-grown men. Nay, they go further, and count it superstition to believe in an unseen, all-pervading, all-controlling, living God, to pray to Him for definite objects, to commit ourselves to His keeping, and to think that He can guide and impel us toward good, without affecting the perfectly voluntary character of our moral actions. According to them, there is no God with whom we have to do, no Lord

of heaven and earth—at least, none that concerns us; we may know phenomena and trace their causes for a step or two, but can ascertain no first cause, and need not trouble ourselves about any super-sensual sphere.

For the purposes of our present discussion, we must simply ignore these extravagances of unbelief. We assume the existence of God, and the relation of man to God as defined in a revealed religion. Then superstition is either a blind adherence to a traditional religion other than that which God has revealed, or such an exaggeration or distortion of the true religion as outrages reason, deludes the imagination with vain hopes, or oppresses the soul with degrading fears.

We define our subject further as superstition in Christendom. We make no attempt to survey the religious illusions and credulities of the heathen and Mohammedan world. Enough to think of those opinions and practices in Christen-

dom which remove the God of love far back into a region of terror, and fill the foreground with a multitude of more helpful and pitiful beings—*e.g.*, angels, departed saints, and anointed priests—who, induced by the homage of the faithful, procure for them and convey to them blessings which, but for their intervention, God would have refused.

Now declamation on this topic may be easy, but it is not so easy to draw the line of argument. And for two reasons:—

(1.) Religious superstition has palliations in surrounding ignorance. It must always have been, in a strict sense, irrational, but when it was in harmony with the condition of human intelligence, it was not so irrational as when it is retained in defiance of that intelligence. In times when men in any unusual degree erudite or scientific were suspected of magic and sorcery,—when witches could transmute themselves into quadrupeds, when fairies danced on the green hills, when fire-breath-

ing monsters dwelt in caves, and dragons haunted the forests,—religion could not but be infected with the love of prodigy. Little wonder that then the holy hermits were thought to be wonder-workers; priests had a weird power to bless or ban; certain wells of water had healing virtue—not, as we might suppose, from their chemical ingredients, but from their consecration to some virgin or saint; certain objects acted as charms or amulets against evil spirits; and certain ceremonies and forms of words had the force of spells and incantations. Now there are large masses of population within Christendom which have not yet outgrown the habits of thought which characterised the Dark Ages of Europe. And in treating the subject of superstition, we have to remember the distinction between countries where it is generated and fostered by the whole state of the intellectual atmosphere, and those—as our own country—where it has nowadays no such extenuation to plead.

(2.) The superstitions of Christendom are not sheer inventions, or original and absolute lies, but extravagant and disproportioned representations of ancient truths, and it is not possible to estimate them justly or intelligently without recollection of this fact. They hold truth in a weak and even deleterious solution, but they do hold truth, which men might otherwise have let slip. They swathe and smother the gospel and its ordinances; but, if you know how to unbind and disentangle, it is primitive Christianity after all that lies within :—

> "There is some soul of goodness in things evil,
> Would men observingly distil it out."

And so also there is some soul of truth in what may appear no better than pernicious errors; and if you analyse them, and draw off the elements of human invention and the accretions of ignorant fear, you may distil even from them most wholesome doctrine. *E.g.*, it is a true thing,—it is the reverence justly due to the Blessed

Virgin Mary, to apostles, and to the memory of eminent saints departed,—which is exaggerated into a continual invocation of them, with the ascription to them, though they be our fellow-creatures, of a capacity to hear and answer thousands of petitions from all parts of the earth simultaneously,—a notion which, while professing to enliven and facilitate, really distracts and degrades devotion. It is also a true thing,—viz., the cardinal position of the Atonement in Christian doctrine, and of the eucharistic commemoration of the Atonement in Christian worship,—which is mischievously and unscripturally set forth in the erection of altars, the display of crucifixes, the oblation and adoration of the Host. And again, it is a true thing,—viz., the deference due to pastors and teachers given by Christ for the perfecting of saints,—which has been twisted and magnified into the obligation laid on all baptized persons to yield unquestioning submission, at least in matters of faith and

morals, to the directions of the clergy, as speaking with the potent voice of the Church, which is guided by the Holy Ghost.

Thus, when we deal with superstition in Christendom, it is necessary to remember that we are dealing with corruptions and misrepresentations, not with denials of Christianity. The practical effect, indeed, of the superstition may be in some respects even more mischievous than would ensue from an open unbelief. An internal anti-christianity may be more perilous than an external. To retain Christian language at the fullest, and meet with carefully elaborated doctrines and institutions the religious cravings of mankind, and yet to hide from them the simplicity and liberty of the Gospel of grace, is probably the most subtle and skilful way of neutralising the New Testament of our Lord and Saviour. But far be it from us to say that such is the intention of those who are in point of fact pursuing that policy! A candid mind will

always keep fairly in view the historical rise and peculiar character of Christian superstition. Nay, more: a generous mind will think with compassion, and not with irritation, of those who, having inherited these forms of Christianity from the past, cling to them under the serious conviction that these, and these only, enshrine and preserve the holy faith.

But, keeping these considerations in mind, we want to look this thing fully in the face, and see wherein its strength lies. There is a point on which, as on a pivot, a great deal of controversy must turn. It is expressed in a word which begins to be familiar to the ear in the ecclesiastical disputes of our time—*Sacerdotalism.* The whole influence of superstition in Christendom associates itself with the institution of a priesthood, having intimate relations with heaven such as men out of that priesthood, however pious, cannot possess, and wielding a mystic power over eternal destinies.

It is not difficult to see how this, though

unknown to the Christian Scriptures, sprang up and spread in the Church. There is a tendency in every privileged order of men to harden into a caste. And the presbyters of primitive Christianity were all the more easily turned into a sacred order of priests, because the converts from Judaism, and still more from heathenism, had always been wont to be guided in religion by priests, and craved the same direction or protection in Christianity. But neither those who assumed this position, nor those who conceded it, had any conception of the tremendous results to which it has led.

In times of ignorance the power of the priesthood became enormous; and in times of turbulence and violence, when meekness and justice were almost driven from the earth, it suited the laity to have religion shut up in consecrated places, under the custody of priests who could shrive them at last from all their misdeeds, and who would be responsible for the safety of their

souls. So the ghostly fathers of Christendom became indispensable, and, as a holy caste, separated themselves from ordinary conditions of life. In the West they took vows of celibacy, and received the tonsure, —in both these particulars deliberately following the heathen priesthood, and not the Jewish, which admitted wedlock, and forbade the making of "any baldness on the head." At the summit of the Western ecclesiasticism, when fully developed, appeared, appropriately enough, a supreme pontiff, as the high priest of "a worldly sanctuary." We say, appropriately enough, because it seems reasonable that, in whatever region priesthood is exercised, it should have a head of authority—a high priest to control and guide the use of the sacerdotal prerogative. The priesthood under the Old Testament being on earth, the high priest was on earth also; but the proper sphere of priesthood in this dispensation being in the heavenly places, Jesus Christ is there —"the High Priest of our profession."

Those, however, who have a worldly sanctuary still, altars and holy places made with hands, are only consistent in having their high priest in an earthly place. As for those Anglican priests around us, who differ from Roman priests not at all in regard to the powers they arrogate, but only in not receiving the tonsure, not undertaking vows of celibacy, and not submitting to a supreme pontiff, we find no inspiration of confidence or element of safety in what is peculiar to their position, because they claim to be a priestly caste with stupendous spiritual prerogatives, and yet themselves irresponsible to any head of supreme direction in the region where they serve the altar and offer the sacrifice.

Our rejection of sacerdotalism is based impregnably on the fact that it is unknown to the Christian Scriptures, and contrary to the whole genius of the Christian dispensation.

Often have those who maintain this system been challenged to produce any

passage from the New Testament in which a pastor, preacher, or minister of Christ is styled ἱερεὺς, or to prove that the apostles themselves were ever consecrated as priests. It is notorious that this challenge has never been met. All that has been done is to assume that the Lord's Supper must have been a sacrifice even in the upper room at Jerusalem, on the night before the Great Sacrifice was rendered on the cross; and then to infer (1) that, as there can be no offering of sacrifice except by a priest, Christ must have acted then and there as High Priest, offering Himself under the forms of bread and wine to God; and (2) that, when He bade the apostles "do this in commemoration of Him," He by implication summarily ordained them to the priestly office. It is at once sad and ludicrous to see this feeble foundation supporting all that huge sacerdotalism which overshadows Christendom. Yet here are the very words of the Council of Trent: "Corpus

et sanguinem suum sub speciebus panis et vini Deo Patri obtulit, ac sub earundem rerum symbolis, apostolis, quos tunc novi testamenti sacerdotes constituebat, ut sumerent, tradidit, et eisdem eorumque in sacerdotio successoribus, ut offerrent, præcepit per hæc verba, Hoc facite in meam commemorationem."* The very same ground is taken by those Eastern churches which ascribe to their ministers a properly sacerdotal character. And the same must be said of one school, and it is feared, a growing school, of English clergy. In the "Tracts for the Day"—a volume edited by the Rev. Orby Shipley, a well-known Anglican—there is a quite unambiguous essay on the Real Presence, in which it is first assumed that the Eucharist is a sacrifice, and then inferred that those who lawfully celebrate it must be priests. The writer tells us, in complete harmony with the Council of Trent, that "When our

* Canones et Decreta Conc. Trid., Sess. 22, cap. i.

Lord instituted the Sacrifice, He ordained the Priesthood at the same time. This is the effect of the words which He addressed to the apostles: 'Do this for my memorial.' He commanded them to 'do' as He had done . . . As Christ offered Himself under the form of bread and wine, they were to do the same; and no one who is not invested with that commission can legitimately exercise that high function. Hence the dignity of priesthood is the discriminating Order of the Christian ministry."* Strange indeed that the "discriminating order" should nowhere he expressly mentioned in the New Testament, where the order of presbyters or bishops is mentioned so often, and their ordination described and enjoined!

On the incongruity of sacerdotalism with the brightness and blessing of our dispensation there is no necessity to dilate. There is no worldly sanctuary now, no need of altars or propitiatory sacrifices,

* Tracts for the Day (1868), p. 238.

since Christ has put away sin by the sacrifice of Himself; and therefore there is no room or function for any other priesthood than the High Priesthood of our Lord in heaven, untransferable and inexhaustible, and the universal priesthood of the saints, offering up spiritual sacrifices acceptable to God through Him. We ought to be thankful for all spiritual helps in devotion; but we ought never to allow any caste of our fellow-men to push us down from the heavenly places to the earthly, and intervene as by authority between us and our God and Saviour. Would that all England perceived this as clearly as did her greatest poetess! Thus Mrs. Browning:—

"Priests, priests—there's no such name!
Through heaven's lifted gate
The priestly ephod in sole glory swept
When Christ ascended, entered in, and sate
(With Victor's face sublimely overwept)
At Deity's right hand, to mediate,—
He alone, He for ever. On His breast
The Urim and the Thummim, fed with fire

From the full Godhead, flicker with the unrest
Of human pitiful heart-beats. Come up higher,
All Christians! Levi's tribe is dispossest.
That solitary alb ye shall admire,
But not cast lots for. The last chrism poured right
Was on that Head, and poured for burial,
And not for domination in men's sight."*

It will not be thought that we have given too much prominence to the mischief done to Christendom by the sacerdotal system, if only it be considered how this enslaves both intellect and conscience.

Superstition loves an oracle. A heathen devotee prefers a scrap of tradition, or the word of a soothsayer, to any rational argument. And the Christian devotee is reduced by sacerdotalism to the same infatuation. He is told, not to investigate truth on its proper evidence, but to embrace certainty, through an unquestioning submission of mind to all dogmas whatever inculcated on church authority. The promise of the New Testament is, that the Holy Ghost will be our Teacher; but sacerdotalism

* Works, vol. iii., pp. 299, 300.

maintains that the Church is our teacher, and that we receive the instruction of the Holy Ghost simply in obeying the voice of the Church. It is assumed that there is such a voice sounding through all the Christian centuries, and always consistent with itself. It is also assumed that, for all practical purposes of direction, this voice is conveyed without error to the Christian layman by the priest, who is his spiritual superior and guide. There is thus an oracle in every parish; and the provision for religious certainty is completed in the Latin Church by having a supreme oracle at Rome. The high priest there is now fully and very consistently proclaimed to be also the infallible prophet. Having usurped the prerogative of Christ, he also usurps that of the Holy Spirit. Such is the dreadful climax of superstition in regard to moral and spiritual truth. Such is the crowning insult to reason and to history—a fraud on the human mind, and a prodigious imposture.

Sacerdotalism controls conscience through the "sacramental system." It does not matter very much whether seven rites, or only two, are exalted into sacraments. The mischief is done by the theory of sacramental grace, which maintains an invariable connexion between participation in those rites and the possession of spiritual life and blessing, and ascribes to the sacraments an inherent power or virtue to produce mystic effects.

At Baptism, lo! the priest takes an infant in his arms, and with "life-giving water" touches the tender brow, making the sign of the cross, saying the name of the Holy Trinity. The effect is said to be instantaneous regeneration, and the admission of the child to be an heir of the kingdom of heaven. It is not that Baptism expresses or symbolizes regeneration, or that inward grace should be desired and even reverently expected with or after the outward sign; but that a regenerating virtue resides in the sacramental action, and a spiritual blessing

is invariably and indisputably conveyed whenever the pious ceremony is performed. As, however, in this service no act of sacrifice is involved, Baptism may properly be administered by deacons, and is valid when performed by lay persons, or even by heretics.

The Lord's Supper is scarcely allowed to retain its original name; and this is hardly to be regretted when superstition has all but obliterated its original character. It is the Holy Sacrament of the Body and Blood, or the Sacrament of the Holy Eucharist. The Lord's Table, though the name authorised by St. Paul, also disappears with the Lord's Supper; and we find in its place the Altar, approached with genuflexions, decked with flowers and gems, and supplied with artificial lights of symbolical import. At this altar the priest officiates or celebrates, leaving the Christian people in the distance, and by an act called consecration is supposed to induce instantaneously the real presence of the Son of God on that altar,

in, with, under, or by means of bread and wine; before which Divine Presence, thus localised and contained invisibly within material forms, it is proper that all men should bow in lowly worship, just as if they saw the Lord and cast themselves at His feet. Then whosoever receives from the priest the sacramental elements (in the Church of Rome the bread only), whatever his mental or moral condition, is supposed to receive Jesus Christ by actually swallowing Him. Little wonder that Mohammedans have bitterly ridiculed such a doctrine as this! Averroes, the Arabian philosopher, said, "I have travelled over the world and have found divers sects; but so sottish a people I never found as the sect of Christians, because with their own teeth they devour that God whom they worship." Dr. Atterbury has said to the same effect, "The Egyptians were the scoff and laughing-stock of the rest of the world for worshipping the leeks and onions which grew in their gardens, but certainly those Chris-

tians are more stupid, who first pretend to make their God, then fall down and adore Him, and then eat Him."

Yet, almost incredibly absurd as this superstition is, it seems to take a most powerful hold of the human mind. The great Lutheran Church has never been able quite to shake it off. And although none of the religious superstitions was more thoroughly exposed than this by great controversialists of the Church of England in the sixteenth and seventeenth centuries, there is at this day a considerable body of Anglican clergy inculcating a doctrine of the Real Presence and of the Sacrament of the Altar hardly to be distinguished from that of the Council of Trent. In an essay already quoted, it is distinctly said that, "at the great moment of consecration, the glorious humanity of the Son miraculously unites itself to the bread and wine. Whole Christ, Body, Blood, Soul, and Divinity, is then present: and shall we not worship Him with adoring faith, and the deepest

prostration of our spirits?" It is then maintained that the reception of the consecrated elements in the "sacrament of life" is the reception of the body and blood of Christ, so that the communicant is united, soul and body, to the Son of God. "This union is absolutely unattainable by any of the sons of men, except through sacramental participation of His body and blood." The result of this is, that the salvation of man is indeed ascribed to Jesus Christ, but it is obtained, not through faith in His Word, or by any act or process whatever proper to our spiritual nature, but through the rites of the Church, and by the mechanical process of eating and drinking. What do men mean by exclaiming against materialism in science, when they themselves teach this gross materialism in theology?

It is needless to dwell on the cognate superstitions connected with the other five rites which in the Greek and Latin Churches are held to be sacraments. The mischief lies in 'the sacramental principle.' It is not

easy to discuss this on grounds of Scripture, for the term sacrament is unknown to Holy Writ. It is indeed employed in the Latin version as equivalent to the Greek word mystery; but though that term is used in relation to matrimony (the marriage of Christ and the Church), it is never applied to either of the two great rites of which we have spoken—viz., Baptism and the Lord's Supper. No doubt we find in very early Christian writers a tendency to employ in regard to these ordinances the language of hyperbole; and we can allow for inflation and extravagance of expression in men who had not yet learned the need of exactness and precision. But what were at first the unguarded phrases of enthusiasm have now been for ages hardened into theological formulæ, and imposed on Christendom as momentous truths. The sacraments are said to confer grace. Loss of the sacraments, no matter from what cause arising, is held to involve perdition. Everything depends on a series of outward acts.

Regeneration is by Baptism; the gift of the Holy Ghost is conveyed by the ceremony of Confirmation; sin is removed by doing penance under priestly direction; and life communicated and sustained by the reception of consecrated bread and wine into the body. So the clergy are as essential to our salvation as Christ is. A priest or deacon can plant us in grace by Baptism, a bishop can give us the Holy Ghost, and a priest, calling down Christ from heaven with a few words as often as he pleases, can put Jesus Christ into our mouths, and so by some singular transfusion into our hearts. Thereupon we are bidden to be thankful for the wonderful provision in the Church for carrying us to heaven. It is as though I should be thankful to one who first put out my eyes and then led me about with a cord tied round my wrist—or to one who first crippled me and then presented me with a polished pair of crutches. Superstition blinds and lames the people whom the Gospel of God

would enlighten and enable to walk at liberty ; and the helps which it proffers are but a poor reparation for degradation of the human conscience, and damage done to the sacred laws of the human mind.

But if the sacerdotal claim and sacramental superstition are really unfounded in truth, the question presses—what is it that gives to them their marvellous endurance, their obstinate vitality? What is the secret of their prevalence at the present day? What are the sources of their power?

Some persons cut short such inquiries by referring all to the wiles of the devil and the artifices of evil spirits, busy in Christendom as they have been busy in the heathen world, and bent on defeating the Gospel of God. Others ascribe these things to the astute and interested policy of a priesthood pressing the same claims on one generation after another, playing on the fears of men, and contriving to hold them in their power at all the crises of their

lives. There is truth in both of these views. But what we rather wish to discover is this—what it is in human nature that makes men so credulous of sacerdotal claims, and so feebly submissive to the yoke. What gives to superstition, however originated, its fulcrum of advantage?

Not ignorance,—for though superstition is most prevalent and powerful where popular education is most defective, and especially where the Holy Scriptures are the least known, it can take and hold possession of highly cultivated and erudite men. It gives great scope for learning in the exploration of what is called Catholic antiquity, and for ingenuity in reconciling tradition with Holy Writ.

We believe that the strength of superstition consists in its grappling with and misguiding, but not extinguishing, a controlling element in human nature—conscience, and the religious instinct. This cannot be suppressed, and when it is in vehement action under self-reproach and

fear of retribution, it will drive men who know not the way of peace in the Gospel, and who dread direct dealing with God, into any sort of superstitious phrenzy. A sense of the awfulness of Divine judgment, and of personal unfitness to pass through the ordeal, will, when evangelical truth is not known, send any number of restless consciences to priests who profess to be empowered by God Himself to absolve from sin, to convey grace, and ensure salvation—who can even obtain one's release after death, and the release of friends for whom the heart is sore, from the fiery pains of purgatory.

Besides this main support of superstition, there are also secondary reasons for its influence. There is a love of the marvellous, a positive pleasure in believing the incredible, which in some minds casts a halo round the most egregious fictions. There is also a sort of intellectual debility in religion, partly original and partly acquired ; an excessive mistrust of reason and

common sense; a childish acquiescence in usages and prescriptions; a timidity before persons who use high-sounding titles, wear imposing robes, and claim great prerogatives; a kind of servile satisfaction in being dictated to, and directed, with a voice of authority that does not hesitate to anathematize all persons whatever who demur.

It gives us concern to see how little the injurious effects of superstition are regarded or feared. Some men apologise for it as a harmless excess in a good thing. They tell us that the mass of mankind must always be ignorant, and led by a few; and that the religious motives and restraints which are suited to them must take a form more external, and perhaps extravagant, than cultivated persons may approve. But in point of fact all exaggeration or overstraining is baneful to religion; and it can be shown that the influence of superstition, whether on the many or on the few, is, and must be, mentally and morally pernicious.

(1.) It depresses intellect. It bids men disbelieve their senses on matters which their senses were Divinely given to determine. It makes them distrust their own mental processes, and by so doing discourages mental exertion. It cries out against reason as the inveterate enemy of faith; and of such faith as superstition requires, it certainly is the enemy. We all admit the incapacity of reason to discover the distinctive truths of our revealed religion, but we deplore the banishment of reason from the whole region of spiritual thought. No wonder that Dryden himself succumbed to superstition, when he could write:—

"Dim as the borrowed beams of moon and stars,
To lonely, weary, wandering travellers,
Is Reason to the soul.
And as those mighty tapers disappear
When day's bright lord ascends our hemisphere,
So pale grows Reason at Religion's sight,
So dies, and so dissolves in supernatural light."*

* "Religio Laici."

Not so. The death of reason is the extinction of the mind. And it cannot be the true religion which nullifies the intellect in order to save the soul.

We have only gone so far, however, as to say that superstition depresses human intellect. And even against this it may be urged that some who hold what we have called sacerdotal and sacramental Christianity are men of great intellectual calibre and dialectic skill. We admit that there are instances of this. As we have said of learning, so we may say of intellectual subtlety, that if it will stoop to serve superstition it has great scope in vindicating the mystic efficacy of rites and ceremonies, and assailing all contrary opinions as rationalism and impiety. The most abject credulities have had defenders of controversial acuteness and ability. Nevertheless, the tendency of superstition has always been to narrow and sophisticate the intellects that have served it, and to throw them out of harmony with the

highest culture of their age; and in so far as it pervades the mental habits of a nation, it encourages frivolity and puerility of thought, and checks scientific and political progress. In modern Christendom it has had most powerful sway over women, who have a large share of devotional sensibility, but have for the most part been miserably educated as regards the laws of evidence and powers of reasoning, and over masses of peasantry whose sluggish souls are full of tradition and prejudice.

(2.) It injures morality. We speak, of course, of the general tendency of superstition—not bringing any charge of immorality against particular persons. Indeed, we readily grant that, as it has wielded influence over men of erudition and intelligence, so also it has ruled over some men and women of pure and saintly character. But on the large scale, whatever misguides or enslaves conscience, and externalises the Christian faith and repentance, must be hurtful to morality.

If we acknowledge that superstition may cast a spell over pure and honourable minds, we must also observe that it is quite as much at home with characters of the lowest type. It is the religion of the Sicilian or Spanish bandit, who places himself and his misdeeds under the protection of the Virgin Mother and the saints, makes votive offerings at their shrines, probably wears a rosary, and is scrupulous about kneeling to the wayside cross. It allows persons of profligate life to be devotees in rites and ceremonies, so long as they render tribute to the Church, and abjure whatever is called heresy. An English historian* has said of the French king Henry III.: "His debaucheries formed an extraordinary contrast to the superstition of his character, and both brought him into universal contempt." But there is no necessary contrast between profligacy and superstition. They are frequent allies. The qualms of conscience under a bad

* Tytler.

life are allayed by the rites of superstition, and the oftener this is done, the more sure and speedy the rebound to self-indulgence.

But not licentiousness only finds tolerance. Every sort of immorality grows. It is notorious that the most superstitious nations in Christendom are the most addicted to falsehood and crime. The more priests there are in any country, the more offences. The more idols and images, the more lies. The more confessional-boxes, the more vices — adulteries, rogueries, murders. So it has been proved in the comparison of criminal statistics, and that through successive generations.

Why is this? It must be admitted that the priests and friars in those communities declaim against vice, and the confessors endeavour to prevent or restrain it. But they do not go to the root of the matter in the human heart; and not applying the true remedy for cleansing and healing provided in the Gospel of Christ under the power of the Holy Ghost, but laying the

stress of moral influence on devices and checks that possess no Divine sanction or power, they egregiously fail,—nay, they foster the evils they would prevent. By submission of conscience and minute auricular confession to priests self-respect is lowered, and the sense of direct responsibility to God obscured. Manliness of character is sapped; womanliness is invaded. Guards of moral integrity which are in our nature are thrown down, and artificial guards set up which give way under the strain of human wilfulness and passion. Moreover, there is something very demoralising in the way in which vice and crime are dealt with by the priests of Christian superstition after confession. Sin is weighed and measured, its heinousness determined, its veniality pronounced upon, its penance appointed,—so much for this offence, so much for that,—and the conditions assigned on which it may be absolved. The tendency of all this is to make men think of sin as a thing quite

manageable, which can always be got rid of on proper conditions of time and money: and what can be conceived more fitted to enfeeble the conscience and to harden the heart?

(3.) It fosters intolerance. It can put on a smiling aspect, and multiply *fêtes* as well as fasts. In excels in decoration, in bannered processions, in displays of colour and effects of music. But nevertheless it has a dark and cruel spirit. It hardens the hearts of its votaries. It recognises no rights as limiting its authority, and respects no convictions or feelings that conflict with its requirements.

On those who accept its yoke, superstition often presses most inhumanly. It directs them to degrading and senseless cruelties in order to please God and attain to a religious life—makes men and women imprison themselves, torment themselves with sleeplessness and semi-starvation—as though one must contradict the laws of health and self-preservation in order to

serve Him by whom those laws have been established. Then it makes men keen to force on others the bonds to which they have subjected themselves. They exclaim against the liberty of the press because it stirs inquiry, and would, if they could, allow no freedom of worship—not even decent burial to those who dare to revolt against the yoke.

The cruelty of superstition is deeply marked on human history. Even the brightest and gayest forms of polytheism have inflicted savage persecutions, and insisted on horrid rites. And in this persecuting spirit sacerdotal Christianity has not fallen short of paganism itself. As Rogers has said in a well-known ode, the "savage, sullen soul" of a lion is meekness itself compared with the unpitying spirit of superstition.

This has done grievous wrong to the Christian faith, which has had to bear the discredit of an intolerance that the Spirit of Christ condemns. It has shed the blood

of saints and faithful confessors of Jesus Christ. In opposing what was regarded as error, it has trusted not to arguments, or the power of truth, but to excommunication, repression, and punishment, and has tried to exterminate heretics, not to persuade or win them. Witches were burnt in this and other parts of Christendom, not by our religion, but by superstition. So were Jews beaten and robbed, Lollards seized and tortured, and Puritans had their ears cropped. God was supposed to be the Arch-Persecutor, and misguided consciences treated every difference as a matter of life and death, and breathed out against every opponent threatening and slaughter.

(4.) It provokes to infidelity. There is a curious pendulous action of the human mind, according to which unbelief swings man over to credulity, and credulity in turn induces unbelief.

Infidelity prepares the way for superstition. The religious craving of human nature, trifled with or denied for a time,

has a strong reaction, and then not only allows, but exaggerates the supernatural elements around us. A late writer, discussing the influence of Mr. John Stuart Mill, has observed, "The spread of Mr. Mill's sceptical atheism has been followed by a perfect simoom of sacerdotal usurpation. The spirit of undue disbelief stimulates the spirit of credulity and emotional observances. Our sentiment of religion is obviously inextinguishable, and those who attempt to discard it from our schools, or crush and baffle it in society, will find that their efforts hereafter, as heretofore, result in an access of superstition, a tightening of formularies, and the spread of sensuous services. These are the defences and outward coverings behind which the religious sentiment intrenches itself from the withering influences of the atheistical spirit." *

But now consider the other swing of the pendulum. Superstition causes a reaction towards extreme rationalism, and a bitter

* *Blackwood's Magazine*, January 1874.

contempt of all spiritual beliefs. It does so by covering sacred names or objects with childish fancies, by committing religion unwarrantably to positions which intelligence and reason despise as fabulous, and by requiring faith without giving any good grounds for it,—in fact, degrading our holy faith into a desperate attempt to credit the incredible. Thoughtful minds must be alienated. Inquiring minds are choked with doubts, which are simply called wicked, and never answered. And so a prejudice is raised against our religion, and a most needless and hurtful gap is made between the faith and the intelligence of the age. Just as the educated Hindoos, detecting through science the absurdities which have been imposed on them and their fathers as sacred Brahminical doctrines, readily become very sceptical of all religion, so do educated Europeans, when made aware of the legendary and unveracious character of much that has been taught as church tradition, turn away with scorn from all

religion, and swell the forces of positivism and infidelity.

This is most apparent in countries where superstition has been long prevalent, and the Bible has never been a household book. The priests with unerring instinct have discouraged its circulation, and disparaged its authority by placing tradition on a par with it in the rule of faith. The consequence is, that when men begin to doubt, they do not refer to the Bible, to ascertain by careful and candid examination whether the Christian religion, as it came from Christ, is responsible for these doubtful or erroneous tenets, but proceed to discredit religion altogether, as a collection of fabulous beliefs skilfully manipulated by priests to promote their own objects. Of course, the more dense the surrounding superstition, the more reasonable in their eyes is a total unbelief. As Vinet has it, "When in an age of reason the superstitious system is tried and proved unreasonable,—when in an age of learning it is found to

be the product of the grossest ignorance, —then the infidel spirit takes courage, and with a zeal in which there is a strange mixture of scowling revenge with light-hearted wantonness, of deep-set hatred and laughing levity, it proceeds to level all existing temples and altars, and raise no others in their room."

It is sometimes said, without much reflection, that superstition is at all events much safer than scepticism; for if it errs, it does so on the right side, and it must be better to believe too much than to believe too little. Then it is added that we can hardly have too much of a good thing. But how foolish is this! Most certainly we may have too much of a good thing; and to force too much upon us is the very way to create a distaste or revolt, and lead in the end to our taking too little, or none at all. History shows, over and over again, that to urge men to believe too much issues in their believing very little indeed, and even scoffing at revealed religion altogether.

But this is not all our answer. We hold that superstition is not exactly believing too much, but believing unreasonably, without warrant and proof, or against evidence and common sense, under the influence of traditional teaching or ghostly fears. So to believe is to destroy the grounds of true faith, to insult the self-respect of the human mind, and most unjustly to expose all religion to contempt.

The very calculation of the infidel party all over Christendom is that the weight of superstition will sink all religion into an abyss of intellectual scorn. The counter-calculation of the sacerdotal party is that infidelity, swallowing up Protestantism, will go on to the extreme of impiety; and then mankind, rather than become materialists and atheists, will turn back affrighted, and cast themselves prostrate before the sacred altars. To hold the middle ground between these is to expose ourselves to the javelins of both parties—to be called reactionaries and simpletons by the infidels,

and to be assailed as irreligious and irreverent by the priests. Nevertheless it is the right ground for men who would save the truth of God from being betrayed and wounded in the battle.

In no case, and under no inducement, should we combine with the sacerdotalist to oppose the infidel, or with the infidel to defeat the priest. Either alliance would lead us on dangerous ground, and expose our religious convictions to distrust. Enough for us that we have a perfectly good argument against the infidel, both historically and pneumatically; and we have quite as good an argument against the sacerdotalist, from Scripture, from reason, and from church history. In the former argument the aids of superstition would only embarrass us; and in the latter the scoffs of infidelity or impiety would only discredit us and throw the sympathy of devout spirits on the other side.

It is the aspect contra-superstition of this great double conflict which is at present

before our minds; and the problem is how to purge Christendom of the widespread evil which this lecture describes, without losing any of the underlying truth and reverence. Burton, in his "Anatomy of Melancholy," after a survey of the religious condition of mankind, seems to despair of its being purified till the coming of Christ: "To purge the world of idolatry and superstition will require some monster-taming Hercules, or Divine Æsculapius,—Christ Himself to come in His own Person to reign upon the earth a thousand years before the end."

However this may be, there is work for us to do in the present time; there are counteractive remedies which we are bound to employ. We must spread the Holy Scriptures, and guide men into an intelligent and comprehensive knowledge of the great fontal volume of our religion. We must aim at the continuance and completion of that Reformation of religion according to Scripture which for various reasons

was left unfinished in the sixteenth century. Above all, we must nourish and cherish the true spiritual life of the Church. Ridicule will never drive away superstition, though it is a lawful weapon in this controversy and in some respects very effective. No amount of cold reasoning will overcome superstition, because it is the misguidance (as we have indicated) of a real spiritual instinct, and the mistaken answer to a genuine spiritual want—the want of the human heart crying out for God, for peace of conscience, and for hope beyond the grave. That want must be met, and not denied; and it is met in the faith and experience of the truth as it is Jesus, in the assurance of the love of God, in the fellowship of the Holy Ghost, in the promise of eternal life, in the communion of saints, in the fervours of prayer and sacred song, in the warm atmosphere of a living, spiritual Church. Superstition loses all its power when truth found in the Divine Oracles is believed and felt, and scope is given to the

new life in all its sympathies and fresh desires, as a life dependent on no earthly priest or ceremonial act, but kindled from heaven, and imbued with the spirit of love and liberty.

We know that this is too vague for those pedants in religion who distrust all play of thought, are suspicious of liberty, and have no confidence in anything but a formulated certainty. Such persons ought to admire a stake of wood driven into the mud, motionless in some pond of water or by the river brink, more than the water-plants which are so facile as to dip and quiver when the surface ripples. But the dead stick is rotting away, while the plants live and spread in beauty. Ours be the faith which lives, and is sensitive to active thought and opinion all around,—

"And, like the water-lily, lives and thrives :
Whose root is fixed in stable earth, whose head
Floats on the tossing waves."*

* Wordsworth, "The Excursion," Book V.

Scientific Unbelief: A Statement and an Apology.

BY

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IV.

SCIENTIFIC UNBELIEF: A STATEMENT AND AN APOLOGY.

IT is said that when, in 1832, Robert Brown, the most profound of English naturalists, who had for years borne Humboldt's title of "Botanicorum facile princeps," received his honorary degree from the University of Oxford, he was unknown to the assembled graduates. The foremost man of science of his day, whose contributions to knowledge laid the most important foundations of modern science, and whose labours secured the universal acceptation of Humboldt's title, was yet unknown even by name to this

company of the best educated of England's sons. The years that have since passed have seen a great change. No class of men are now so widely known as the students of Natural Science. The humblest interpreter of nature secures a fame which was unknown to the masters of days not long gone by. Even the man who does no more than intelligently retail in attractive language the labours of others is known and honoured throughout the land. Few works issuing from the press have a larger body of readers than those devoted to science, and addressed to the general public. Not only in our universities, but in our elementary schools has the study of Natural Science been introduced.

With this growing importance of the Natural Sciences, and growing position and power of their expounders, there has been gradually developing a philosophy purely materialistic—which reduces facts or phenomena in themselves, as well as

in their relations to each other, to the operations of blind physical forces: a philosophy in which there is no room for a Power external to nature—no room for a God. The maintainers of this philosophy accept no other evidence than that of the senses. They consequently insist on subjecting the evidence adduced for the existence of such a Being to their own standard, and on testing it by the methods of investigation through which all their present knowledge is derived; and if it fail to satisfy them, without hesitation they eliminate the Deity from their philosophy. In meeting the natural desire to attain to a sufficient explanation of the world and its inhabitants, of man and society, the materialist rests, if I may use the word, in a state of spiritual nescience, denying what he cannot test or discover in his materials or by his methods. The conclusion of this modern philosophy G. H. Lewes affirms to be a "patient resignation to the unknowable." And

this must be so; for Herbert Spencer, the prophet of the school, records in these words the logical conclusion of his materialistic position: "The power which the universe manifests is utterly inscrutable."

This, in its plainest and simplest aspect, is the scientific unbelief of the present day. Did it remain in this form merely as a so-called scientific conclusion from the premises of the materialistic investigator, and as the ultimate of materialistic philosophy, it would be buried in its own obscurity, and might well be left there. But it not only ignores the Creator and Governor revealed to man in nature, but also the God of grace, and the supernatural revelation by which He is made known, and brings its holders into practical opposition with the creed of all who profess and maintain the religion of Christ. It is an active and aggressive form of unbelief, not only keeping those who adopt it away from the blessings of the Gospel, but leading them to attack the doctrines of revelation, and

supplying a show of reason to many who, naturally unwilling to face the moral relations demanded by a holy God, are yet uneasy about these relations.

I purpose to examine the origin and nature of this unbelief, and see whether it can be defended or excused.

First, look at the origin and nature of the more generalized form of unbelief—the rejection of a personal God, an intelligent Agent external to nature. The various aspects of aggressive opposition to the Christian faith are rather matters of detail; the source and centre of the whole lie in this fundamental position.

In entering upon the inquiry, let us secure precision in our terms. Science is not limited to any section of human knowledge. In whatever direction we have facts or data arranged systematically, and exhibiting the relations of one to another, and of each to all, we have a science. The facts of ethics and theology, with their interpretation and their causal relations,

form sciences as much as those of chemistry or biology. But the term science has in recent times become, when used without any qualification, more and more limited to Natural Science—to the knowledge of material nature. In this sense it is the equivalent of physics as opposed to metaphysics,—the one dealing with the facts or phenomena of matter with their causes and relations, and the other with the facts or phenomena of mind with their causes and relations.

It is in this limited sense that I propose to use the term—and, indeed, my observations will be chiefly connected with that section of physical knowledge which deals with biology, or the science of living organisms.

The materials which form the basis of Natural Science are the facts or phenomena of nature. There is no scientific order of facts in nature. The first step that the naturalist must take is to observe and collect his facts. The facts themselves

are absolutely true : man cannot make or modify them. But the objective facts are valueless to science, till they become the subject of the naturalist's knowledge. The science of Botany, as it now exists, is unaffected by the numerous plants growing in hitherto unexplored regions, and which are yet undiscovered and unknown. These remain as realities in their native habitats, to be one day brought within man's knowledge ; when each one, as it is observed, will find its place in the science of plants, and contribute a share towards its perfecting. It is the function of the man of science to observe and collect these objective data. They form the raw materials of his structure. Whenever man intervenes, the possibility, or rather the certainty, of error arises. Already acquired and systematized knowledge, as well as the structure of his own mind, influence him in his observations ; and the object itself is never sufficiently apprehended in its entirety and in all its details. However cautious observers

may be to avoid error and to confine themselves to the truth, the same external phenomenon never presents itself in the same light and fulness and with the same details to two observers,—nor, indeed, to the same observer at different stages of his scientific attainments and culture. False theories as often rest upon errors in regard to matters of fact, as upon errors in deductions from actual facts.

With every caution, then, the man of science collects his data. To secure the possibility of a perfect science, he must be in possession of all the materials; he is culpable if he omits any within his reach.

His next step is the accurate interpretation of his collected facts, and the arranging them so that their affinities, resemblances, and differences shall be understood and exhibited. As the house does not exist, though all the stones which shall enter into its structure be collected together on its intended site, until by human intelligence each stone is placed in

its own position and in its proper relation to all the others,—so the objective facts connected with any section of natural knowledge must be grouped by the scientific architect so as to exhibit their various relations, before they can claim to be received as a science.

The openings for the entrance of error are now immensely increased. When in the infancy of Natural History some organ or organs were arbitrarily selected, and their number or development was adopted as the basis of the classification of the objects to which they belong, there was no difficulty in securing uniform and accurate treatment; just as there can be no difference of opinion in determining the alphabetical arrangement of words in a dictionary. When, however, it became obvious that no single set of organs could be selected which would exhibit the actual relations between different organisms, but that the whole of each organism must be taken into account, and every part and organ must obtain their

true position and exercise their proper weight, the scientific arrangement of the data was beset with innumerable difficulties, and made liable to innumerable errors.

To complete the science a further step must be taken. A philosophic view of the whole must be exhibited by generalisations deduced from the arranged facts.

In such a work as this, man may engage the noblest faculties of his mind, and fully occupy every moment of his time. If excuse may be tendered for being exclusively absorbed with one pursuit, surely the naturalist may plead it. Investigating perfect organisms—perfect as a whole for the functions they have to discharge in the economy of nature, and perfect in every detail of structure and organisation—ever finding new beauties, new fitnesses, new wonders — rising with increasing knowledge to still higher views of the harmony and balance in nature, and the fitness and perfection of all—few studies are more en-

nobling. The legitimate and logical issue of this pursuit, one would expect to be to lead the student "from nature up to nature's God."

The causal relation between a contrivance fitted to accomplish a selected end, and the designer whose will and intelligence are exhibited in the contrivance, is intuitive or self-evident. This close and necessary relation has never been doubted or denied where evidence of design has been allowed to be present. In every object on which man has exhibited intelligent action for a purpose, no matter how low the attainments of the operator have been, and how rude the product is, the relation between the article and the artificer is always acknowledged. For example, the evidence from design supplies the main source of our lately acquired knowledge of pre-historic man; the only remains of chief importance that have come down to us, and convey trustworthy information, being the more or less rude implements.

The purposes for which these stone, bone, or bronze tools were designed, are, in the main, not difficult to determine. The nature of the material chosen, the fitness of the implement produced for the end for which it was designed, its rudeness or finish, and the presence or absence of ornamentation, with the nature of it when present, are held to supply evidence of different degrees of intelligence in the artificers; and this again is assumed to indicate different stages of development in the race. From these data almost alone have been educed the received accounts of the early inhabitants of Western Europe. Underlying this comparatively novel science of pre-historic man, is the assumption that the tools exhibiting design are the work of an intelligent agent exercising his power and will in their production. Some observers imperfectly acquainted with the palæolithic flint implements, and realising only the rudeness of their forms and the remarkable conditions under which they have been

found, have denied that they were the products of intelligence, and maintained that their forms were accidental and the result of the physical forces that have chipped and broken the flints since they were washed out of the beds in which they were formed. A show of support to this opinion has been given by the production of specimens selected from flints which certainly owe their forms to purely accidental circumstances, and which approach in form the ancient tools. Were such a position tenable, the whole science of palæolithic man would fall to the ground. And, indeed, so rude are some of these implements, and so often do they approach the accidental forms frequently associated with them in the same gravel bed, that only an experienced eye can recognise those which have the marks of human workmanship. Nevertheless, the careful examination of the rudest, and presumably the most ancient, of these implements, establishes beyond doubt that their uniformity of

shape, correctness of outline, and sharpness of the cutting edges and points are due to design.

Here let us notice that flints formed by an intelligent workman, equally with those the similar forms of which are due to purely accidental circumstances, are without intelligence in themselves. Intelligence can only be affirmed of an external designer, and its amount is measured by the fitness of the material selected for the implement, and the success with which the manufactured implement accomplishes the proposed end, when applied. The science of pre-historic man is thus almost wholly based on the argument of design.

Much knowledge has been obtained regarding the civilization and development of peoples and races in different ages from their monuments. The everlasting structures of Egypt, and the sculptured palaces of Assyria, with the various implements, ornaments, and sculptures that their exploration has brought to light, have yielded to

the investigator a knowledge of these ancient people which was unattainable from other sources. The extensive literature of Greece and Rome, though making us acquainted with the story of the people of those ancient centres of civilisation, and exhibiting the position of high development to which they had attained, has yet been added to; and our certain knowledge has been greatly increased by the buildings, sculptures, and implements which have remained to us, and which are unhesitatingly accepted as unerring exponents of the intelligence of the producers.

In our own days we have been singularly taught by this method the actual state of the civilisation and intelligence of the different nations of the earth. Within an interval of a few years there have been twice collected together the products of the genius and skilled workmanship of various lands. In his progress through the courts and along the galleries of the Exhibitions of 1851 and 1862 the intelligent observer

saw more than the beautiful form, the exquisite workmanship, or the efficient plan of the objects themselves. In and through them he read a trustworthy record of the stage of advancement of the various artificers, and estimated the place they occupied in the world's civilisation. The arts and manufactures of Asia and Africa, of Europe and America, told their own stories when placed side by side with each other. A larger lesson was read by each one who could intelligently contrast the objects of 1862 with those of 1851; for he was able to estimate the substantial progress made in that interval by each country and by the world at large.

Thus everywhere, in dealing with man's works, the intelligence of the designer is estimated from the thing designed. Is man the only agent exhibiting the intelligent use of suitable means to accomplish a desired end? On the contrary, we have abundant indications of intelligent design everywhere throughout the animal king-

dom. Thus, for example, the burrow of the mole is singularly fitted to provide a suitable hunting-ground for the supply of that creature's necessary food, and the intricate arrangements of its home form a remarkable means of defence or escape in the event of the intrusion of an enemy. And again, how admirably adapted in its nature, and how suitably chosen in its position, is the web of the spider with the view of securing the artificer's prey! The animal world supplies the most varied contrivances employed as suitable and always successful means for accomplishing a desired end, and everywhere indicating intelligence on the part of the agent. In the two cases adduced, the intelligence is not in the burrow or in the web, but in the design of the external agent. If we further examine the animals themselves, we detect unmistakable evidences of design in them. Limiting ourselves to the organs which produce the contrivances in which we have seen evidences of design,

we observe that the limbs of the mole, which are easily co-related as a whole and in their various parts with the limbs of other mammalia, are unfitted for walking on the ground; but the peculiar modifications of the various parts which produce this unfitness are obviously contrived for efficient burrowing, and thus to meet the necessities of the mole's underground life. Then, in the spider, there is a special set of organs for secreting the glutinous substance which, by a wonderful spinning apparatus, is made into the threads from which the creature manufactures its web. The intelligence discovered here cannot be, as we have already seen, in the things designed,—it must exist in the external designer. The mole had no part in the production of its limbs, or in the modification of the typical structure for its own special needs; nor had the spider any agency in the formation of the glutinous substance, or the construction of the spinarets by which it is made into threads. If

there be here indications of design, the intelligence must be external to both animals.

Nowhere are such contrivances more apparent than in man himself; for we are able not only to observe the means adopted, but experimentally to test their fitness to accomplish the ends intended. Take, for example, the contrivance by which we see external objects. The eye is a round ball protected by its strong dense sclerotic coat, and lodged in the hard, bony, orbital cavity, which is cushioned all round for its reception. The ball of the eye can be moved in any direction by the conjoint action of its six muscles; and muscles and eye are connected with the brain by the optic and motor nerves. The optic nerve—the only one in the body able to appreciate light and colour—is spread out in the cup-like retina in front of the dark wall which lines the sclerotic coat: the only black membrane in the body which finds here its proper, and only useful

place. The light passes through the double-convex crystalline lens, which is of different density in the centre and circumference so as to correct aberration by bringing the rays of the centre to the same focus as those of the circumference. This perfectly transparent lens is not a homogeneous substance, but is composed of an infinite number of extremely minute ribbon-like structures, filled with clear albumen. The admission of the light is regulated by a thin, flat, muscular curtain, the iris, which hangs vertically in the aqueous humour before the lens, and expands or contracts the opening by involuntary action induced by the stimulus of the light. The dense elastic cornea protects the exposed portion of the eye, and encloses the aqueous humour. All the parts are wonderfully made—the microscope reveals the most marvellous complexity of structure—and all conspire to produce perfect vision.* Besides, there

* I do not forget Müller's statement that there

are the various appliances to secure the motions, renovation, and protection of the eye: the muscles, nerves, and blood-vessels, the lachrymal apparatus, and the eyelids. One cannot conceive a more obvious instance of design—so many structures fitly arranged for the specific purpose of obtaining a perfect image of external objects, and placed in front of the ophthalmic nerve, with its numerous ramifications, by which the image is received and conveyed to the brain: these all point with unerring certainty to the intelligence of an omniscient and omnipotent Designer.

This conviction is still more increased when we realise that the same perfection exists in every other organ of the body,—

are imperfections in the eye, which could be avoided in an optical instrument. In the same way there are defects in the levers and fulcrums of the human body which could be avoided in a machine. But such defects are relative only to the limited view taken of these structures, and disappear when the structures are examined in the light of their complete morphology and teleology.

in the organs of hearing and tasting, of breathing and digestion, and so on; and that all these perfect organs are joined together into a complete whole, where each has its efficient place and its harmonious relation to all the rest.

But here, where the argument from design seems strongest, and the conviction that we are dealing with the intelligence of an external omniscient Designer is most powerfully brought home to the mind, we are told that there is no indication of intelligence, of will, or of power, in any of these remarkable contrivances, or in the combination of all of them into one complete organism.

Wallace, who divides with Darwin the credit of originating the hypothesis of materialistic evolution, thus states the case:—

"All the phenomena of living things,—all their wonderful organs and complicated structures, their infinite variety of form, size, and colour, their intricate and involved

relations to each other,—may have been produced by the action of a few general laws of the simplest kind, laws which are in most cases mere statements of admitted facts. The chief of these laws or facts are (*a*) the law of multiplication in geometrical progression, (*b*) the law of limited populations, (*c*) the law of heredity, (*d*) the law of variation, (*e*) the law of unceasing change of physical conditions upon the surface of the earth, and (*f*) the equilibrium or harmony of nature. This series of facts or laws, are mere statements of what is the condition of nature. . . It is probable that they are but the results of the very nature of life, and of the essential properties of organized and unorganized matter." ("Natural Selection," pp. 265-7).

In his "Lay Sermons" Huxley states the case with great plainness. "In Paley's famous illustration," he says, "the adaptation of all the parts of the watch to the function or purpose of showing the time, is held to be evidence that the watch was

specially contrived to that end; on the ground that the only cause we know of, competent to produce such an effect as a watch which shall keep time, is a contriving intelligence adapting the means directly to that end.

"Suppose, however, that any one had been able to show that the watch had not been made directly by any person, but that it was the result of the modification of another watch which kept time but poorly; and that this again had proceeded from a structure which could hardly be called a watch at all—seeing that it had no figures on the dial and the hands were rudimentary; and that, going back and back in time, we came at last to a revolving barrel as the earliest traceable rudiment of the whole fabric. And imagine that it had been possible to show that all these changes had resulted, first, from a tendency of the structure to vary indefinitely; and secondly, from something in the surrounding world which helped all variations

in the direction of an accurate time-keeper, and checked all those in other directions; then it is obvious that the force of Paley's argument would be gone. For it would be demonstrated that an apparatus thoroughly well adapted to a particular purpose might be the result of a method of trial and error worked by unintelligent agents, as well as of the direct application of the means appropriate to that end, by an intelligent agent.

"Now it appears to us that what we have here, for illustration's sake, supposed to be done with the watch, is exactly what the establishment of Darwin's theory will do for the organic world. For the notion that every organism has been created as it is, and launched straight at a purpose, Mr. Darwin substitutes the conception of something which may fairly be termed a method of trial and error. Organisms vary incessantly; of these variations the few meet with surrounding conditions which suit them, and thrive; the many are unsuited, and become extinguished.

"According to Teleology, each organism is like a rifle-bullet fired straight at a mark; according to Darwin, organisms are like grapeshot, of which one hits something and the rest fall wide.

"For the teleologist an organism exists because it was made for the conditions in which it is found: for the Darwinian an organism exists because, out of many of its kind, it is the only one which has been able to persist in the conditions in which it is found." (pp. 330-332).

I will make one more quotation to show the position of the materialistic school; and having referred at some length to the evidence of design in the eye, I will extract Mr Darwin's interpretation of its evolution. He says: "To suppose that the eye, with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely

confess, absurd in the highest degree." ("Origin of Species," sixth ed., p. 143.)

He however argues that, if numerous gradations from a simple to a complex eye exist and are each useful, "then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, should not be considered as subversive of the theory. . . To arrive, however, at a just conclusion regarding the formation of the eye, with all its marvellous yet not absolutely perfect characters, it is indispensable that the reason should conquer the imagination; but I have felt the difficulty far too keenly to be surprised at others hesitating to extend the principle of natural selection to so startling a length.

"It is scarcely possible to avoid comparing the eye with a telescope. We know that this instrument has been perfected by the long-continued efforts of the highest human intellects; and we naturally infer that the eye has been formed by a some-

what analogous process. But may not this be presumptuous? Have we any right to assume that the Creator works by intellectual powers like those of man? If we must compare the eye to an optical instrument, we ought, in imagination, to take a thick layer of different densities and thicknesses, placed at different distances from each other, and with the surfaces of each layer slowly changing in form. Further, we must suppose that there is a power, represented by natural selection, or the survival of the fittest, always intently watching each slight alteration in the transparent layers; and carefully preserving each which, under varied circumstances, in any way or in any degree tends to produce a distinctive image. We must suppose each new state of the instrument to be multiplied by the million; each to be preserved till a better one is produced, and then the old ones to be all destroyed. In living bodies, variation will cause the slight alterations, generation

will multiply them almost infinitely, and natural selection will pick out with unerring skill each improvement. Let this process go on for millions of years, and during each year on millions of individuals of many kinds; and may we not believe that a living optical instrument might thus be formed as superior to one of glass, as the works of the Creator are to those of man?" (p. 146.)

It is the fashion of some who hold these doctrines to laugh at the credulity of all who marshal, as they put it, behind the "drum ecclesiastic"—"the fools" or "old ladies of both sexes" who believe the Scriptures. I doubt whether, among the vagaries of the numerous sects that accept the Bible as a Divine revelation,—and these vagaries are very many and often very strange,—there is one that demands such a draft on man's credulity as the doctrine of Darwin I have now quoted, and many others which are fully, and I venture to say blindly, believed by the

advocates of the doctrine of materialistic evolution. One must have laid aside his common sense before he could accept such a process of unintelligent development as a sufficient explanation of that wondrous organ which we happily possess in its final and unimprovable stage. And this we believe is what Darwin demands of his disciples when he insists, for their proper apprehension of his theory, that "it is indispensable that the reason should conquer the imagination." I can see no meaning in this demand, unless it is that the author requires of his readers that his reasoning should conquer their common sense!

Nevertheless the advocate of unintelligent development holds a position which he maintains is logical and unimpregnable. As a student of nature he knows only bodies and the properties of bodies. All his facts and phenomena are appreciated by the senses. These supply the only tools with which he is or allows himself to be

acquainted. In their exercise he finds fullest occupation for his life. By their help he discovers the most wonderful structures perfectly accomplishing the work they have to discharge. He observes nothing that he cannot thus apprehend. Whatever is brought under his investigation must be tested by the only standard with which he is acquainted. If it does not submit to his measure, and supply him with evidence which his senses can appreciate, it is dismissed as transcendental, it can have no place in his philosophy.

Thus circumscribed, the naturalist necessarily, and from his premisses logically, excludes mind from the phenomena he investigates. But the recognition of design in nature was founded on the conviction that there was a Designer outside of nature. As long as those teleological views were accepted it was impossible for the naturalist to descend to a pure materialistic platform, or to limit the evidence on which his science was built to that of the senses.

Darwin's hypothesis of evolving from the less perfect organisms of the past all the living organisms, and all their various structures and appliances, by the gradual accumulation of unintended variations which secured for their possessors some advantage in the struggle for life,—this hypothesis got rid of a directing or controlling designer. And thus the desideratum of the materialist was supplied. Darwin's hypothesis, says Carl Vogt, in the plain language which he delights to use, "turns the Creator without any hesitation out of doors, inasmuch as it does not leave the smallest room for the agency of such a Being." It should be stated that Darwin himself demands, in the exposition of his hypothesis, the original interference of a Creator when He breathed life and its several powers into a few forms, or into one; and that some, like Prof. Asa Gray, hold a modified theory of evolution, from which the Creator is not eliminated, by believing that in the economy of nature

He has led the variations along certain beneficial lines, as a stream is led along useful lines of irrigation. Nevertheless, the logical issue of Darwin's argument, and that which is fully accepted by its chief defenders and expounders, is the banishment of design from nature. "The whole world, living and not living, is," according to Huxley, "the result of the mutual interaction, according to definite laws of forces possessed by the molecules of which the primitive nebulosity of the universe was composed. If this be true, it is no less certain that the existing world lay potentially in the cosmic vapour; and that a sufficient intelligence could, from a knowledge of the properties of that vapour, have predicted, say, the state of the fauna of Great Britain in 1869, with as much certainty as one can say what will happen to the vapour of the breath on a cold winter's day."

With his data, and employing the tools which he has elected, there is no other

stable position for the materialistic student of science than this which he honestly assumes. He clearly states and stands by his position.

Darwin allows that all the facts and forces in nature can be accounted for by seeing in them the realization of a design efficiently accomplished by God. But this, he holds, would not be science. And this is so with science as he limits it; but the strength of his position is its great weakness. No science can be perfect which clearly separates itself from all others, and rejects help that cannot be tested by its own methods. These methods are as numerous as the sciences. Chemistry, Physics, Biology, Geometry, Ethics, etc., have all their own methods. Rightly pursued, each science should help the others; as none are circumscribed by a hard-and-fast line. Each science has obviously its own peculiar facts, which belong to the specialist; but a philosophic view of the phenomena and forces of the

universe, based on the facts and processes peculiar to one division, is a retrograde step such as would be taken if botanists were to return to the artificial system of Linnæus. The science of the universe is a complete whole; its various parts may be investigated separately, but all must be united to produce the complete science: just as in the body the different organs can be thought of and studied separately, but all are needed to form the perfect body. "The body is not one member, but many. If the foot shall say, Because I am not the hand, I am not of the body; is it therefore not of the body? And if the ear shall say, Because I am not the eye, I am not of the body; is it therefore not of the body? If the whole body were an eye, where were the hearing? If the whole were hearing, where were the smelling? But now hath God set the members every one of them in the body, as it hath pleased Him. And if they were all one member, where were the body? But now

are they many members, yet but one body. And the eye cannot say unto the hand, I have no need of thee; nor, again, the head to the feet, I have no need of you. . God hath tempered the body together, having given more abundant honour to that part which lacked; that there should be no schism in the body." (1 Cor. xii. 14-25.)

In forcing all facts to fit into his mould, and rejecting whatever will not bear the pressure, the modern materialist is without excuse; but it should be remembered, while condemning him, that this proceeding is not peculiar to himself, but to a large extent characteristic of the race. The exclusive devotion to any pursuit invariably interferes with the independent attitude of the devotee to other subjects. It matters not what the pursuit be—the most ennobling or the most grovelling, the mere gain of money or the gain of knowledge, the search for pleasure or after science—whatever engrosses the whole mind of necessity warps the judg-

ment, obscures mental vision, and affects the life. It is far from easy to throw off the bonds that such a pursuit coils round one; it is even difficult to see them,—to realise that they are there.

The materialist, of course, begins his investigation of nature with matter—with "the primitive nebulosity of the universe," —and out of this lifeless substance he evolves, by the operation of properties inherent in it, all the marvellous inter-dependent physical phenomena and conditions of the universe, and all the endless marvels of life and structure and intelligence which nature exhibits. But he begins at the wrong end. In making dead matter the efficient cause of intelligence, he inverts experience. An intelligent agent external to the dead matter must always operate upon it to secure any modification with a purpose. The human mind, when unbiassed, always begins with intelligence—with God. And the God whose external power and personality are clearly seen in

creation is the same God who is more fully revealed in the Bible as the Author of all things. Do we not witness, then, a strange perversion of judgment when we see the student of nature rejecting the God revealed in it? Instead of being compelled by the evidence before him to acknowledge God, the experience of our day has led some to the conclusion that the tendency of physical science is toward irreligion. But the Bible, which teaches man the perfect character of the Creator, reveals also the relation subsisting between man and God. The dread of God arising from the degradation which disobedience brought into the world, and which has passed upon all men—for all have sinned—is a doctrine fully revealed in the Bible, but also abundantly obvious to every one who examines his own inmost nature, or intelligently looks out on mankind; and nowhere is it more obvious than in the professed creed of those who claim to be the profound thinkers of our

day. The doctrine may be ignored, but the fact cannot be erased from the constitution of man. The dread may be buried out of sight by forgetting the object of it. By an exercise of the reasoning faculty, our consciousness, our common sense may be conquered, and the Deity banished from our philosophy. The *fact*, however, remains ; and physical science, or natural knowledge of any kind, is unable to reveal an efficient mode of getting rid of it. But the same Bible that manifests in its nature and extent the evil, reveals as well the Divine way of removing it. Through this living Way many of the greatest masters of science have returned to their God, and rejoiced in His favour,—men like Faraday and Brewster, who have held with the same powerful grasp the doctrines of revelation and the teachings of science, and have adorned alike the life of faith and the schools of philosophy. Honest, independent, and fearless in the investigation of science—the more honest, inde-

pendent, and fearless because they were dealing with the visible works of God—yet were they equally loyal, loving, and trusting, in the presence of the God of all grace.

A shorter treatment may be given of scientific unbelief as it is exhibited in the hostile attitude assumed by materialists to the Christian religion. The logical issue of their scientific creed precludes the possibility of acquiescence in the doctrines of a revealed religion which rests entirely on the basis of the supernatural.

The same fundamental sources of mistake which we have seen to be present in the materialist's more generalised position of the rejection of God, interfere with his judgment in dealing with Christianity. But in addition to these we have here a great amount of hard words and opprobrious epithets indulged in, I regret to say, by both sides, but with this noteworthy difference: that the leaders of theological thought and the masters of theological science rest

on the force of their reasoning, and only the most feeble expounders of revelation condescend to violent language; whereas the founders and prophets of the materialistic philosophy—excepting the illustrious observer who has given his name to the doctrine—are responsible for the use, on their side, of words and phrases that, to say the least, are worse than objectionable.

The errors which influence the attitude of some defenders of religious life and dogma to scientific opinion, as well as of scientific unbelievers to Christian truth, are due partly to presumption and partly to ignorance,—presumption in travelling beyond the province of one's own science, and ignorance in not ascertaining the true state of the case before making such excursions. Eminence in one science does not mean eminence in all. The mental training secured in arranging and co-relating phenomena of one kind may be applied to test the processes of reasoning employed in constructing systems relating to other kinds

of phenomena. But the logical faculty can never ascertain whether the phenomena are true or false in themselves. This can only be determined by a competent knowledge of the nature of the phenomena which form the premisses of the reasoning. Grant the premisses, then the logic which is common to all the sciences will enable us to ascertain whether the conclusions follow fairly from them; but it can never assist in discovering the matter of fact. No one is therefore warranted to dictate within a province not his own, whatever be his eminence in his special science.

Abundant instances exist in which the publicly recognised or self-assumed defenders of religion have not hesitated to dictate in sciences though they are completely ignorant of their veriest rudiments. Such proceedings receive, as they deserve, the ridicule of their opponents, and encourage a condemnation in which the whole party they ignorantly defend are too often included. No less true, however, is

this of the aggressors among men of science when dealing with the facts of religion. The measure they mete to their opponents may be applied to themselves. Science has not suffered from the one set of aggressors; nor has religion permanently suffered from the other.

Let me justify this position by adducing an instance or two. Take the extraordinary proposal made by Sir Henry Thompson and publicly advanced by Tyndall, of submitting the efficacy of prayer to the test of physical experiment. The terms of the proposal are so familiar, that it is unnecessary to repeat them.

A fundamental error is concealed in his statement of the case when he speaks of prayer as a form of physical energy, or as the equivalent of such energy. In asking a favour from God, the petitioner recognises the Divine will as supreme. The physical energy, asserted to be obtained in answer to prayer, is not connected with the prayer as the effect with the cause,

neither is there any causal connexion between the prayer and the action of God. The very nature of prayer, as well as the belief of the petitioner, connects the answer, whether it affects the physical or the moral world, with the free pleasure of God.

The experiment proposed indicates a total ignorance of the condition necessary to the exercise of prayer, both on the part of the suppliant and of Him who is supplicated. It is of the very essence of prayer, whether addressed to God or to a fellow-man, that the petitioner should have confidence and trust in him who is approached, that he is ready to hear and help, and that he will certainly grant the request if it be consistent with his own purposes and the best good of the petitioner. Without such confidence the child does not present a request to his father. Without this confidence the Christian never exercises, nor indeed could exercise, the privilege of prayer. But in the proposed experiment this confidence is at the outset destroyed

when the petitioner enters into a contract to experimentally establish the efficacy of prayer by means of a physical test, which shall be estimated by one whose only position in the contract is that he denies the power of God to interfere with physical nature. The petitioner in such an experiment would obviously surrender his only rational position before God.

And there is error also in regard to the position occupied by God in prayer, seeing that His free-will is denied. When we ask a favour from a fellow-man we necessarily imply that he has freedom of choice to grant or refuse a petition. Still more essential is this fundamental position to our proper relation to God in our prayers. We not only recognise God as acting from His own free-will, but as possessing data for action which are beyond our reach. We do not seek help from a short-sighted mortal like ourselves, but from the Eternal, to whom all things are ever-present, and who knows our state and

wants better than we do ourselves. Our limited wisdom often leads to the desire for things as blessings which, were we duly enlightened, would present a very different aspect to us. But the petitioner has this confidence: that every petition offered in in faith, for things consistent with the will of God and with our own best good, will be granted. And if his desires are not complied with, or his petitions are answered in a way not anticipated, he rests with assurance on the conviction that He doeth all things well. Each petition carries with it by implication, if not actually expressed, "Not my will, but Thine be done." The case from the Christian's point of view demands that the Prayer-Hearer should possess the power of controlling nature and man, and that He may and does exercise spontaneous volition in the interests of His people when moved thereto by prayer. But this free-will of God is no more invariably efficient as a physical agent on the demand of another, than would the volun-

tary actions of man be in similar circumstances. It cannot therefore be measured. No scheme has yet been devised for subjecting the will of man "to those methods of examination from which our present knowledge of the physical universe is derived." The proposal, therefore, is something more than premature to subject the volitions of God to these methods. The occurrence of so many errors in this proposal is a necessary consequence of the fact that the experiment was proposed by one who is practically ignorant of prayer, and who moreover has taken no steps to make himself acquainted with the position of prayer in the science of theology.

We may parallel this disregard of the essentials of efficient prayer by an illustration from Tyndall's own studies. As a student of the late J. D. Forbes, I learned to consider that the movements of the glacier were due to a viscous condition of the ice composing it. This view, clearly expounded by its author, was enforced by facts and

experiments which seemed to establish its truth. Tyndall insists that the motion is due to the breaking up and instant re-freezing of the glacier ice, and he supports his opinion by his remarkable re-gelation experiments. Suppose I still adhere to the views early received from an illustrious physicist, but propose, nevertheless, to accept the re-gelation theory if its advocate will perform before me his re-gelation experiment under certain conditions which I must prescribe; and chiefly that the metal cavity in which the broken ice is re-frozen must be raised to a red heat, and the pressure must be continued for a specified time. It is of no use to explain that my conditions make the experiment impossible. I take my stand on my proposal, and till I receive the demonstration in my own way I would be entitled to maintain, on the same ground that Tyndall denies the efficacy of prayer, that re-gelation supplies no satisfactory explanation of the motion of glaciers, and is indeed itself a myth.

I shall take as the other example of the ignorance shown by men of science in regard to the realities of Christian life. the definition of religion given by Galton in his recently-published "English Men of Science." His definition consists of three elements. The religious man is characterised first, according to Galton, by "the great prevalence of the intuitive sentiments: so much so that conflicting matters of observation are apt to be laid aside, out of sight and mind." Intuitive truths or sentiments are things which the mind sees to be true immediately, in their own light, and without any proof or reasoning. It is assumed that some matters of observation conflict with the intuitive sentiments of the religious man, but this should not be assumed without proof. Besides, Galton has received the testimony of some men eminent in science, who have decided religious bias, that they do not find any real antagonism between religion and the study of nature (p. 136). There is, however, a more serious

defect on the face of the proposition than this; for, assuming that observed facts do conflict with intuitive sentiments, it asserts that the religious man is apt to put out of sight and mind such conflicting matters of observation. Such an attitude to any truth would be destructive to the position of an honest inquirer. In performing his simplest functions the scientific investigator collects, interprets, and classifies phenomena. He has not the power to take in all the data in all their ramifying details; he fails to give their true value and importance to all the factors within his knowledge; and the knowledge, however extensive, is yet limited: as a result, his philosophic generalisations are so far defective. A larger or smaller group of exceptional or residual phenomena are recognised as not completely harmonising with his generalisation. Such conflicting data are not laid aside in science. It is, then, obviously unfair to assert as a leading element in religion, that its professors lay aside out of sight and mind matters of ob-

servation because they conflict with intuitive truths. In recognising as exceptional and hitherto unexplained any matters of observation which may appear to conflict with accepted truths, they are following the practice of science. It is very different if they intentionally ignore any fact whatever, putting it out of sight and mind. This would deserve the gravest condemnation; but in uttering this condemnation it should be remembered that such conduct is not peculiar to the professors of religion. It would be no difficult task to parallel every instance in which a religious man has ignored facts by an instance on the part of one claiming to be a man of science. The transgressor in both cases is always a feeble, and at the same time a violent, advocate. It is obviously wrong to ascribe such errors to all who hold anything in common with their authors, whether it be in theology, biology, or physics. This wrong is done to religious men by the author of "English Men of Science," and

all who, like him, after the fashion of the day, confound religion with the views of its more ignorant and blatant expounders.

Galton's second element of religious life is the possession of "a sense of extreme sin and weakness." It is true the mere observer does not detect the vivid consciousness of sin and personal unworthiness present to every one who comes into personal relation with the holy God. This is apprehended only by the man who measures his own heart and life by the standard of the perfect holiness of God—a holiness fully appreciated by each one whose relation to God depends on its most marvellous exhibition, the redemption-work of Calvary. How much soever he may attain to the life of purity and uprightness essential to his professed character, or may compare advantageously with others around him, he is nevertheless completely self-condemned before the Holy One. His measure of purity is not relative to his fellows. It is therefore only from a

complete misapprehension of the position of a religious man, to maintain and assert that his sense of inability to reach the perfection of God cannot be associated with independence of disposition, energetic temperament, and healthful physique.

The completion of Galton's portrait of a religious man is, that the "revelations of a future life, and of other matters variously interpreted by different sects, satisfy the intuitive sentiments." A more complete misapprehension and mis-statement of the Christian faith and practice could hardly be given. The restored relation of the individual to the personal God is the foundation and superstructure of Christian life: a future life and other matters are of importance only in their relation to the personal God.

Were a specialist in science, however successful in his own speciality, to travel out of his province, and presumptuously to dogmatise upon defective and erroneous data which he had empirically

gathered, he would at once obtain the position such a proceeding deserved. Scientific men show no compassion to a presumptuous sciolist. The records of science in all times,—and at the present day as much as at any time,—abound in instances of severity in such cases. The man who is an authority in the science into which the ignorant intrusion has been made is necessarily the one who is most offended: he is also most severe and most justifiable in his condemnation of the intruder. But, on the other hand, the sciolist, oblivious to his errors, maintains, from his very ignorance of the case, a position which is seen by every intelligent observer to be worse than untenable.

Yet in matters of religion the scientific unbeliever boldly presents his empirical collection of erroneous data, and dogmatically advances his deductions therefrom; and when he is called to account for his errors, and is exhibited as a theological sciolist, he recognises only the beat—loud

or faint, as the case may be—of the "drum ecclesiastic."

Until the sciolist in science admits ascertained facts, there is no room for honest enquiry and no hope for intelligent conviction. In the notorious case which has in recent years been coming to the surface in law-courts and public prints, it is abundantly obvious that all the experiments of Mr. Wallace and his advocates, and all the demonstrations and expositions of the actual form of the earth will never convince Mr. Hampden, as long as he adheres to and argues from his absurd and erroneous views.

In like manner, until the materialist acknowledges that there are other facts besides those of physical science, and admits the realities of Christianity as expressed in its authoritative writings and exhibited in the lives of its honest professors, it is impossible to secure, on his part, a trustworthy enquiry. When he deals with the dogmas of theology let

him master some scientific and systematic exposition of them. As long as he deals fairly and intelligently with that exposition he will be listened to. If his criticism affects the Christian life, let him ascertain the motives to action common to all (however they differ on matters of less importance) who accept the great doctrines of the Bible,—the substitution of Christ and the power of the Spirit.

No intellectual treatment of the subject can be entered upon unless this be conceded. Without this the scientific unbeliever has no position in the enquiry; just as the Christian who ignorantly intrudes into science, no matter what may be his eminence in theology, is out of court. But a merely intellectual position in relation to Christianity is deceptive and unstable. The desire to *do* the will of God is the one condition of spiritual understanding. The absence of this condition is the great cause of infidelity. "If any man will do His will, he shall know of the doctrine."

In looking into this subject, it has been forced upon me that what is above all wanted to direct intelligent, truth-seeking men to the truth, is more numerous and more pronounced life-testimonies to the power of the Gospel. Each Christian must so manifest his life in Christ that it shall be seen to consist, not in the acceptance of dogmas concerning which there may be much difference of opinion, but in a relation to a living Person, and in the continued exhibition of those characteristics in the Redeemer's life which have, in our own day, drawn from those who deny His work the most eloquent tributes of admiration to His life.

THE END.

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